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ABSTRACT

This book, one of a series that uses Geographic Information Systems (GIS) to outline the need for and provision of services (education, health, housing, electricity, roads, telecommunications, postal services, and police services) in each of the nine South African provinces, presents a global view or indicator of the simultaneous influence of the socio-economic status of people and the level of provision of domestic services and public facilities the district of Gauteng. The view in this book encapsulates its social and service profile, obtained, first, by developing indices for the social and service variables for the district. The book uses a single index, or benchmark, of levels of socio-economic status, household services, and public facilities in each magisterial district, created by combining these indices. In order to provide information about local levels of development knowledgeable persons, involved in service delivery in each province, were contacted for their comments. The books in this series contain maps, tables, a bibliography, and contributions from spokespersons in non-governmental organizations, universities, government departments, service providers, parastatals, and research organizations. Demographic information used in the book is based on the 1991 census data. (Contains 39 references.) (BT)

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GAUTENG

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SERVICE NEEDS AND PROVISION IN GAUTENG

SERVICE NEEDS AND PROVISION IN GAUTENG

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PREFACE

Little is known about the overall availability of services within the new provinces of South Africa in relation to fine-grained demographic distributions that are now becoming available through Geographic Information Systems (GIS) technology. Research that has been done on particular services such as water, sanitation and electricity, has largely been undertaken in isolation by parastatal and government service providers and has not contributed to a holistic picture of the availability of basic services. In addition, this information has largely been collected in report and tabular format without any spatial representation of service provision relative to demographic distribution.

In this publication an attempt is made to provide, for the first time, a more complete spatial analysis of socio-economic, demographic and service variables for Gauteng at magisterial district level. Similar publications have been produced for each of the new South African provinces. Not only will the location of needy communities be identified within the province, but the distribution of services such as water, sanitation, electricity, housing, education, health, roads, telecommunications, postal services, police services and even retirement facilities in relation to the demographic patterns of the province will also be established.

The demographic information is based on the 1991 Census data and the provision of services is based on information provided by organisations acknowledged in Chapter 5. When the 1996 Census data become available at enumerator area or magisterial district level, a temporal extension and trend analysis of this database could be undertaken if funding is available.

It is hoped that this publication will supply developers and planners with relevant information to assist in delivering and maintaining basic services. Development role-players at all levels should see the value of developing and maintaining spatially referenced databases that keep up to date with changing demographic and service patterns. The GIS Unit is currently compiling a database of the geographic location of development projects which will provide another important layer of information for decision makers.

J. Taylor
Regional Director
HSRC: KwaZulu-Natal Office

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1

INTRODUCTION

The Human Sciences Research Council (HSRC) has identified the need for socio-economic information on the distribution of resources for infrastructure, services and facilities within South Africa as an important priority. This information will undoubtedly be required for the effective implementation of the Reconstruction and Development Programme (RDP) in the nine provinces.

Consequently the Geographic Information System (GIS) Unit of the HSRC undertook a project aimed at showing the patterns of service delivery in Gauteng at a magisterial district level and relating this to the socio-economic needs of communities within the province. Infrastructure and service facilities identified for incorporation into the project were education, health, water, sanitation, housing, electrification, roads, telecommunications, postal services, police services and retirement facilities.

In order to focus on districts with relatively poor socio-economic profiles and those which require assistance to improve their basic quality of life, the following variables were mapped: population density, pupil:teacher ratio, poverty, number of households and dependency. The information was combined into an equally weighted Combined Social Needs and Service Provision Index which identifies a range of districts in Gauteng as priority areas requiring the attention of provincial authorities.

Although some organisations have done a great deal of research on the availability of services in the province, none has provided the information in an integrated format that allows the distribution of these services and facilities within the province to be visualised. In addition, little work has been done to relate the provision of services to the needs of communities within the region. Consequently, the GIS Unit of the HSRC undertook the project with the intention of entering the information into their GIS system and conducting analyses of the data sets. Maps reflecting the distribution patterns of services and underdeveloped communities in the Gauteng could then be produced.

The production of the document required collaboration with many organisations to obtain information on service provision and provide perspectives as to why specific distribution patterns exist, as well as to outline future trends in meeting the basic service needs of the province. The document has been written to provide a source of information to national and provincial decision makers. In addition, it will be available to development funding agents and planners who provide much needed service infrastructure to needy communities in Gauteng.

2

THE CONCEPT OF GEOGRAPHIC INFORMATION SYSTEMS (GIS)

To many people the term Geographic Information System (GIS) is foreign and confusing. In essence, a GIS is a "system of computer hardware, software and procedures designed to support the capture, management, manipulation, analysis, modelling and display of spatially referenced data for solving complex planning and management problems" (Montgomery & Schuch, 1993). A GIS enables the transfer of spatial information from sources such as satellite images, aerial photographs, topocadastral maps and plans into a computer where the information is stored and analysed before being printed out as maps.

Geographic Information Systems (GIS) made their appearance in the late 1960s and 1970s. Some of the pioneering systems developed included those within the Harvard computer graphics laboratory and the Canadian GIS (CGIS). The driving force behind the development of GIS stemmed from the need for organisations to solve particular spatial problems irrespective of whether they occurred in a business, academic, resource management, social or engineering environment. Specifically GIS was born to meet the ever-increasing need to use and manage large spatially referenced data sets (Montgomery & Schuch, 1993).

GIS was introduced in South Africa in the early 1980s. Progress in its use was slow and South Africa lagged behind the rest of the world until fairly recently. The reason for this stems largely from sanctions that restricted the exchange in GIS use, software, education and training. However, by the late 1980s and early 1990s GIS had progressed significantly within South Africa to become an important tool in providing information needed by decision makers and planners in implementing programmes such as the Reconstruction and Development Programme (RDP).

The advantages of GIS are numerous. Aspects that make it indispensable as a decision-support tool include the ability to overlay and relate several layers of information, to conduct mathematical modelling of data sets, to develop spatial scenarios, to visualise development situations, and to construct spatial decision support systems. One of its major benefits is that it provides a quick and integrated way of viewing information. In addition, with advances in computer technology and software, it allows for the storage, management, manipulation, analysis and output of large data sets.

For these reasons the HSRC decided to use GIS as a tool in achieving its goals, particularly for projects such as the Service Needs and Provision project in Gauteng. GIS has enabled researchers in the GIS Unit not only to integrate data from a wide variety of sources but, in combining this data, to create new layers of information. Without GIS it would have been impossible to analyse and spatially represent service provision in relation to the population in the province.

3

SUMMARY SOCIO-ECONOMIC PROFILE OF GAUTENG

Prior to the advent of democracy in South Africa all of the magisterial districts now in Gauteng were governed by the former white Transvaal administration.

The Gini coefficient of income inequality for Gauteng is 0,61. This is slightly better than the South African average of 0,65. According to the Smith (1987) 71,9% of the total South African population were blacks but only 25,5% of the national income accrued to them. The whites earned 64% of the income, but comprised only 16,2% of the population. The Asians earned 3,2% of the total income and made up 2,8% of the population. The coloureds were 9,1% of the population and earned 7,3% of the total income.

The coefficient of advantage divides a group's income percentage by their population percentage. Scores above one indicate that a group's income percentage exceeds its population percentage. Conversely, scores below one indicate lower percentage earnings than population percentage. The whites' percentage earnings were 3,95 times their percentage population. The Asians were the only other group with a coefficient of advantage above one, 1,14. The coloureds and blacks both had coefficients of advantage of less than one, 0,8 and 0,35, respectively.

Gauteng districts have an average poverty gap of R67 446 and an average poverty gap per capita of R260. In 1991 61% of the population were the blacks, who had a coefficient of advantage of only 0,35, therefore the bulk of the burden of poverty certainly fell on black shoulders.

The black average pupil:teacher ratio was 38:1, while the provincial average was 30:1. The coloured, Asian and white ratios were 27:1, 24:1 and 20:1, respectively. The racially skewed provision of education facilities is only one example of the discriminatory allocation of the services.

The use of socio-economic and service data provide a more complete picture of conditions throughout the province. The use of social and service indices, described in the next chapter, facilitate the use of a single index that summarises the effect of 5 social and 10 service variables.

4

APPROACH TO THE STUDY

4.1 Methodology

The aim of the project was to detail the access of the population to services in each magisterial district of Gauteng. This was not an exercise in mapping the exact location of pipelines supplying water to urban areas for example, but rather in mapping the percentage of households that have access to water supply. Thus the study has two main aspects: the socio-economic profile of the population in each magisterial district, and secondly, the relative access to these services between districts.

The socio-economic variables considered were

- population density,
- total population,
- employment,
- dependency,
- poverty,
- functional literacy,
- pupil:teacher ratios.

The standard of living of the population within a magisterial district will often be an indicator of the access to services. Data relating to the socio-economic variables were obtained from the 1991 Census.

The services considered were

- education,
- electricity,
- housing,
- roads,
- water and sanitation,
- post offices,
- retirement dwellings,
- health facilities,
- police services,
- telephones.

Data on these services had to be obtained from the service providers before being georeferenced and entered into a GIS database format. Once the accessibility of services to the population had been mapped, maps and tables were distributed to experts in each service field for their comment.

4.2 Social and service indicators

A global view or indicator of the simultaneous influence of all social and service indicators is necessary to encapsulate the social and service profile of each district. This will clearly arrange all districts along a social and service gradient, thereby facilitating prioritisation of districts for development interventions. This can be done firstly by developing indices for the social and service variables that represent the social and service profiles of each district. Thereafter these indices can be combined to give a single index of the level of development of a district. These indices were developed for districts at both the national and provincial levels. This allows comparisons to be drawn between national and provincial priorities which differ due to varying provincial and national minimum and maximum values per variable. The variables selected therefore needed to have complete data coverage at both national and provincial levels.

The selected social variables were the poverty gap, pupil:teacher ratio, dependency ratio, total households, and population density. The service variables were the ratios of population to police stations, post offices and hospital beds; the ratio of road length to district area; the ratio of 6 to 17 year olds to schools; the percentages of fully serviced houses, informal houses, formal houses electrified and informal houses electrified and telephone shares. The social index had five variables each with twenty ranges giving a total number of 100 ranges. Additional columns were created to assign the rank of the variable per column. The theoretical minimum and maximum social index value would then be 5 and 100 respectively. The values for each variable could not be ranked in ascending order in all cases. High values in poverty, pupil:teacher ratios, dependency and population densities suggest underdevelopment, but a high value for total households would not. High index scores indicate underdeveloped districts needing development interventions. The corollary to this is that a district not requiring development intervention based on a social index would have a low index score and the following social profile: a low poverty gap, low pupil:teacher ratio, low dependency ratio, low population densities and a high number of households.

The service index had ten variables each having ten ranges. Here the theoretical minimum and maximum values are 10 and 100, respectively. Each service variable had to be ordered according to whether high scores were beneficial to a district or not. A district with a low service index score and not requiring development intervention would have the following service profile: low ratios of population to police stations, post offices and hospital beds; a high ratio of road length to district area; a low ratio of 6 to 17 year olds to schools; high percentages of fully serviced houses, formal houses electrified and informal houses electrified; high telephone shares, and a low percentage of informal houses. A district with a high index score requires development intervention and would have the following service profile: high ratios of population to police stations, post offices and hospital beds; a low ratio of road length to district area; a high ratio of 6 to 17 year olds to schools; low percentages of fully serviced houses, formal houses electrified and informal houses electrified; low telephone shares, and a high percentage of informal houses.

A combined index would add the service and social indices, both having a maximum of 100, and divide the sum by 2, giving a maximum to the combined index of 100. As

in the social and service indices, the higher the combined index score, the greater the degree of underdevelopment.

4.3 Spatial scales

Originally, the spatial analysis of service provision was to be based on the enumerator areas (EAs) from the 1991 Population Census, but for logistical reasons, outlined below, it was decided to confine the analysis to census districts. An EA is the smallest building block of the census and has been defined by the Central Statistical Service as "consisting of a number of visiting points ... a visiting point is any occupied unit, e.g. a house, flat, caravan, hotel, etc." As one would expect, EAs are denser in urban areas than rural areas. Census districts are groupings of EAs and, in most instances, follow similar boundaries to magisterial district boundaries.

The reason for the shift in focus from EAs to census districts is that most of the information on services and service provision is not readily available at EA boundary level, but has been collected and is available at census district level. In addition, the provision of information at this level will provide decision makers and planners at a national and provincial level with appropriate information. Once verified that an area is in need of services, more detailed information, which is not presently available at a detailed level such as EAs, can be collected.

Having said this, there are obvious problems in the analysis of service provision on a census district scale. The major problem is the fact that there is a tremendous variation (demographic as well as in service provision) within districts. Within a single district there may be well-provided for formal towns, while the sparsely populated rural areas may have high poverty levels and the worst rates of basic service provision. When one analyses services at a census district level, these variations could be lost in averaging and aggregation.

4.4 Data problems associated with choice of spatial scale

Much of the service supply data acquired from the service providers was at a town level. So, for example, information was obtained for towns that have post offices, a number of pre-school facilities, etc. Each of the towns was then identified and placed in the correct census district. Often towns were not in the census database or on maps or atlases and thus personal knowledge and experiences had to be relied upon.

The problems that have been highlighted above, stress the need for better data collection, as well as the need to set standards on the spatial scales at which data is collected. This would greatly improve analyses in this field and be an indispensable source of information to planners and service providers. The use of a GIS will facilitate this process since spatial units already exist at different scales from which data can be aggregated. Not only will this result in the standardising of databases but it will also assist in the provision of information over several years and enable trend analyses to be done.

4.5 Problems associated with obtaining data from service providers

One of the main problems encountered in this project was the lack of clear definitions of services. This resulted in information being entered into the GIS and maps being produced for comments by the service providers, only to discover that not all, or conversely too many, facilities had been included in the definition of that service. It was thus important to establish a clear understanding of what is meant by a service and what facilities form part of such a service.

Service providers were largely unfamiliar with GIS and how it could be used. This often resulted in the provision of information that could not easily be entered into the GIS, thus forcing the research team to assess the information before including it in the data set. However, through the process of consultation, this problem was largely addressed and only relevant information was entered.

The format of information on services was often unsuitable for incorporation into the database. This meant the research team had to spend many hours converting the data into a suitable format. In addition, it was not always easy to enter digital or database information from other sources into the GIS, but eventually ways were found to transfer all the data into the GIS software.

Other aspects that plagued the project were inaccuracies in the different data sets, outdated databases and a lack of verified information. Producing maps from a GIS often makes it possible to identify inaccuracies in the information and make subsequent corrections. Experience suggests it is necessary to plan for such delays well in advance.

In solving these problems, the GIS team of the HSRC has added to its expertise in the fields of spatial database development and GIS research. As a result of this report there is now a comprehensive collection of spatial and attribute data related to service provision for census districts in Gauteng. This database can be further developed, refined and provided to any organisation involved in service provision and development in the province.

5

INFORMATION SOURCES

Research on providers of service information and literature reviews was conducted by members of the GIS Unit. All the major known service providers were contacted and appropriate data sources identified. Although attempts were made to obtain recent and comprehensive sources of information, it is acknowledged that more definitive databases may exist elsewhere in the country.

It must also be repeated that certain data sets may have inherent inaccuracies (see Introduction). However, what is important is that the information was obtained from the best known sources and, in some instances, the only known sources. The information is therefore considered the best base available for use by the RDP and from which more refined data can be gathered.

SERVICE TYPE	SOURCE OF DATA	FORMAT AND LEVEL OF DATA	DATE CAPTURED	ORGANISATION
Demographic information	Spatial data captured from 1:50 000 (rural areas) and 1:6 000 (urban areas). Database extracted from 1991 Census	Digital data at census district level	1991	Human Sciences Research Council CSS
Education facilities and indicators	Education Atlas of South Africa	Digital data at a census district level	1994	Education Foundation
Health facilities and utilisation	ReHMIS	Digital data at a point location level Tabular data at health region level	1994 1996	Department of Health Health Systems Trust
Poverty levels	1991 Census Poverty database	Digital data at a census district level	1991	Human Sciences Research Council
Post Office	Post Office: Sales & Marketing Department	Tables at a district level	1994	Post Office
Telephone lines	Telkom: Technology strategy	Tables of residential line shares at district level	1995	Telkom
Roads	Surveyor General	Line digital data	1991	Surveyor General
Water supply and sanitation	National Electrification Forum (NELF)	Digital data at a census district level	1994	Eskom
Electricity supply	National Electrification Forum (NELF)	Digital data at a census district level	1994	Eskom
Police facilities	SA Police Services	Tables at a magisterial district level	1994	SAPS

6

SOCIAL FACTORS HIGHLIGHTING THE NEED FOR SERVICES IN GAUTENG

6.1 Total population

This commentary on population dynamics in the Gauteng province is broken down into the following sections: introduction, population pressure, relevant issues, distribution (size-area of districts, total population, population density), and conclusion.

Population policy

The Draft White Paper for a Population Policy published in September 1996 recognises the important interrelationship between population, development and the environment. It defines sustainable human development as "meeting the needs of the present generation and improving their quality of life without destroying the environment or depleting non-renewable natural resources, in order to avoid compromising the ability of future generations to meet their own needs" (*Government Gazette*, 1996:7). Guided by this definition a number of population concerns and their underlying factors are identified. These population concerns cover four main areas:

- Lack of the availability, use and analysis of population data as especially related to development planning, as well as a lack of institutional and technical capacity for the analysis of population data and for integrated population and development planning.
- Problems related to characteristics of the population itself. These include the structure of the population, the high incidence of fertility and unwanted teenage pregnancies, and high rates of premature mortality, infant mortality and maternal mortality.
- The inadequate analysis of problems related to migration and settlement patterns such as the causes and consequences of urban and rural settlement patterns, as well as the nature and impact of international immigration.
- Problems related to population growth and population pressure in relation to the growth of the economy such as the backlog of social needs to be met, high levels of unemployment and the impact on the environment of population pressure and production and consumption patterns.

The Draft White Paper on Population recognises the link between factors such as poverty, high mortality rates, low status of women, a lack of democracy and high fertility on the one hand, and population growth rates on the other. Strategies have been adopted which will address these concerns. In the past population policy was aimed mainly at fertility control, restricting migration and controlling settlement patterns. The new policy aims to address the problem of population pressure by influencing the determinants of high population growth through a wide range of strategies which include reducing poverty, improving primary health care services,

addressing environmental issues, promoting responsible and healthy sexual and reproductive behaviour in young people, improving education for all and through improving the status of women. In order to reduce population pressure in rural and urban areas the policy aims to provide improved social services, infrastructure and employment opportunities in rural areas through rural development. This should slow down the rapid rural-urban migration and improve the capacity of rural areas to provide a livelihood for people living there.

K.A. Leslie
(Formerly of the University of Venda)

Introduction to population dynamics

Interpretation of population dynamics in terms of total population numbers and density refers to the population's **size and growth,** elements constantly subject to change, and **distribution**, also a dynamic factor. Distribution is linked to spatial location, essentially urban and rural, and to the determinants that could account for patterns typical of the region under review. When one identifies service needs and provision, the analysis should also focus on the locality, the living conditions and the prevailing human and the natural resource base of the people. Population dynamics, which creates identifiable patterns, requires that its assessment includes, *inter alia,* reference to fertility rates (fecundity levels), birth rates, life expectancy, mortality (including infant mortality), death rates, migration patterns, numeric growth in the population size as well as growth rates. Distribution patterns of other population indicators would be relevant too: age, gender, ethnicity and various aspects of the cultural landscape and other population-related matters, including housing issues, health care, morbidity, disease control (infectious and endemic), prevention and cure, education, the family and other forms of social organisation, especially at household level.

Using 1991 data, as for the two maps which follow, would provide a realistic generalisation of the patterns of population distribution. However, since that date the situation at microlevel would reflect considerable change. The abolition of influx control and rural-to-urban migration caused by survival pressure, due partly to climatic conditions (drought and the drying up of underground water supplies particularly) and population increase, as well as to freer migratory movement, would have made their mark. These trends would be felt particularly in Gauteng at provincial as well as at local level, since this province has a very dynamic population structure, composition and distribution. The compactness of the area, together with its diversity, is an important feature of the province.

Population pressure

The issue of population pressure implies that people, in their growing numbers, make increasing demands on the area's resources. This should be seen within the context of the broader framework of the existing economic base and its anticipated growth potential. Although typically urban, Gauteng also has non-urban and even rural areas at different levels of development and technological advancement.

Policies relating to land issues, its redistribution, allocation and ownership rights are in place in rural and urban areas. Structures involved with the acquisition and distribution of income and other resources at provincial and national levels are being established. Due cognisance of existing service provision, its maintenance and extension, is part of policy making in accordance with the Reconstruction and Development Programme, a strategy most concerned with people and an improved quality of life for all, particularly as a participatory endeavour.

Issues relevant to meeting the needs of future population pressure

Population pressure should be interpreted not only in terms of numbers of people, their composition and distribution, but also in terms of the availability of resources, human and natural. Population dynamics, as a facet of meeting needs cannot be seen in isolation; it should be assessed in the broader context of the total political economy. Nevertheless it forms a point of departure and a basis for further analysis of the various structural components and the provision of services to facilitate needs satisfaction. The political, economic, social and natural environments should all be accommodated.

Service provision addresses quality of life issues concerned with satisfying basic human needs - appropriate and adequate nutrition, health and medical care, environmental sanitation and disease control, an opportunity to work commensurate with individual talents, sufficient educational opportunities, individual conscience and freedom of fear, decent housing, economic activities in harmony with the natural environment and a social and political milieu promoting equality (De Souza, 1990:422). These can also be categorised as fulfilling the needs of subsistence, creation, protection, participation, identity, affection, idleness and freedom (Van Zyl, 1995 referring to Max-Neef).

The distribution potential of income, water resources and soil are also specific matters which need to be raised. Moreover, political developments and local initiatives will play a role especially since more emphasis is to be placed on local economic development and administration, as well as on community participation in the new dispensation. These factors will impact forcefully on all forms of service provision.

According to Meintjies, *et al.* (1995), Gauteng's formal employment increased at a much lower rate than its labour force. This led to unemployment and an increase of informal activities, the latter being most prevalent in Greater. Service provision will need to take this phenomenon into account, as well as the situation in regions where mining production has declined. The gender composition varied depending on the economic structure of the various regions. Fewer women resided and worked in the mining areas (West Rand especially), whereas on average the female labour force participation rate was 39,1% in 1991, reflecting typical global trends. The age structure showed differences within regions but related closely to economic and population trends. The Vaal and East Rand areas had a significantly larger young population, the latter despite a fairly high male absenteeism rate. The West Rand had a dominant economically active group with an extremely high proportion of males (93,8% males in the area),as could be expected in the main mining region of Gauteng. Its small percentage of aged also reflected this status. By contrast the Vaal had a low percentage of economically active people due largely to a declining economy. The

strongest economic regions and areas less affected by labour migration, Greater Johannesburg and Greater Pretoria, had a characteristically ageing population. Income inequality was evident between and within subregions and inhabitants and is a factor to be considered in assessing service provision.

It is worthy of note that, despite its small size (1,5% of South Africa; 18 760 km^2), Gauteng is home to 16,8% of South Africa's population. Urbanisation has impacted on the area and it is classified as a first order or greater metropolitan area (Calitz, 1996) with a functional urbanisation rate of 99,6%.

Distribution

Spatially Gauteng may be divided into five regions with clear differences in size, population numbers, population density and economic structures. As noted by Meintjies *et al.*, (1995), each subregion has its own economic structure: services dominate in Greater Pretoria; trade and catering, finance, real estate and manufacturing in Greater Johannesburg; manufacturing in the East Rand and Vaal; and mining in the West Rand. This clearly reflects the history of the region with its origins as the country's mining centre and its subsequent industrialisation and diversification into the development of the tertiary sector to meet the needs of the mines, the factories and the people. This traditional trend is likely to continue with a core-periphery structure clearly evident from its socio-economic spatial patterns in the subregions.

Size - area of districts

The map and related data show that all magisterial districts in the West Rand exceed 500 km^2 (Krugersdorp, Randfontein, Westonaria, and Oberholzer), whereas the East Rand comprises districts that are smaller than 500 km^2 except for the most outlying districts of Heidelberg and Nigel (over 900 km^2). The Vaal subregion has only two districts (Vereeniging, the second largest in the province, and Vanderbijlpark) and both tend to be large (over 900 km^2). Greater Johannesburg's three districts (Johannesburg, Randburg and Roodepoort) are generally small (under 600 km^2). The Greater Pretoria districts (Bronkhorstspruit, the largest in the province, Pretoria, Wonderboom and Cullinan) are of the largest (over 1200 km^2) in Gauteng except for Soshanguve that is, in fact, the smallest magisterial district (65 km^2) in the entire province. This district's historical association with the North West province as well as with Gauteng is a point that should not be ignored.

Political and administrative boundaries in Gauteng cut across residential and economic units. There is no correlation ($r = 0,054$) between district areas and population numbers, indicating that the functioning economy and not only area explain the existing pattern.

Total population

Broadly speaking, population numbers fall into four main groupings:

Table 1a Number of persons per magisterial district

Number of persons	*f* (Magisterial districts)
> 400 000	3
201 000 - 400 000	7
100 000 - 200 000	9
< 100 000	4

According to the above table, the spatial distribution of the population of Gauteng reflects three distinct areas of population concentration (over 400 000 people) of which the Johannesburg magisterial district decidedly a locus of population concentration (over 1,5 million). A contiguous belt of fairly densely populated districts surrounds each concentration:

- Johannesburg, with Alberton, Randburg, Kempton Park and Benoni encircling this dominant core as second order population areas (200 000 - 400 000 persons) and Germiston (upper third order) extending to the north and east;

- Pretoria, with Wonderboom (second order) and Soshanguve (lower third order under 150 000 persons) to the north; and

- Vanderbijlpark, with Vereeniging (second order).

The East Rand (Boksburg, Germiston, Springs and Brakpan) and the West Rand (Roodepoort, Krugersdorp, Oberholzer, Westonaria and Randfontein) form two distinct third order population (100 000 - 200 000 people) areas surrounding the south-west/north-east core of denser population distribution that includes the three areas of distinct population concentration extending from Vanderbijlpark in the south-west to Wonderboom in the north-east.

The outlying areas on the extremities of the province lie in the north-east (Bronkhortspruit and Cullinan) and south-east (Nigel and Heidelberg), with populations of under 100 000 people per district.

Within Gauteng, the East Rand (26,4%) comes second in terms of population size to Greater Johannesburg (33,1%), followed by Greater Pretoria (17,8%), and the evenly matched Vaal (10,6%) and West Rand (10,1%). From a population growth point of view, the Vaal region is highest (2,8% p.a.) followed by the West Rand (2,5% p.a.), Greater East Rand (2,0% p.a.), Greater Pretoria (2,0% p.a.) and Greater Johannesburg (1,0% p.a.).

The generalised pattern tends to hide the variation of settlement structures where extreme inequalities prevail: inner city, high density, suburban with varying income capacities, the urban periphery, planned and unplanned settlements in the immediate and more distant environments. All are at varying stages of integration with the economic core and are developing economic bases of their own.

Changing employment patterns will, in time, impact on population numbers and distribution. This in turn will affect service provision needs and satisfaction. The growth of the black middle to upper income groups, their residential preferences coupled with more freedom to move and the results of mobility processes will change the residential character of formal and informal settlement areas. Residential mobility has increased the options for middle income levels, but lower income groups still have problems with regard to unemployment, poverty and unresolved land issues. These matters will have to be taken into consideration in the provision of services.

J. Fairhurst
University of Pretoria

MAP 1 : TOTAL POPULATION

Source : 1991 Census

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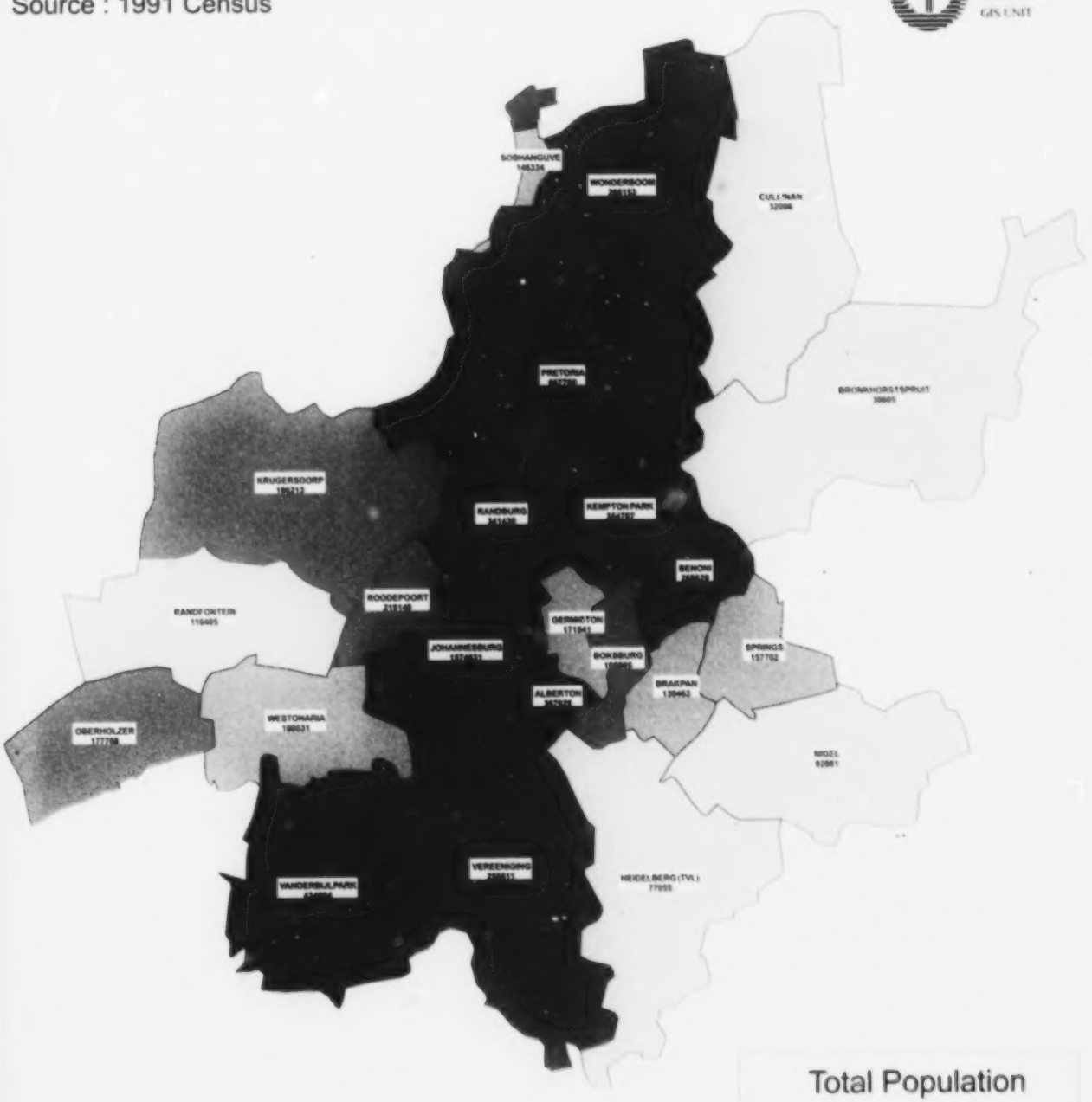

Total Population

	32 006 to 116 405
	116 405 to 171 541
	171 541 to 219 149
	219 149 to 354 787
	354 787 to 1 574 631

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Table 1 Total population

DISTRICT	TOTAL POPULATION
Alberton	367 929
Benoni	288 629
Boksburg	195 905
Brakpan	130 463
Bronkhorstspruit	38 605
Cullinan	32 006
Germiston	171 541
Heidelberg (GP)	77 055
Johannesburg	1 574 631
Kempton Park	354 787
Krugersdorp	196 213
Nigel	92 881
Oberholzer	177 768
Pretoria	667 700
Randburg	341 430
Randfontein	116 405
Roodepoort	219 149
Soshanguve	146 334
Springs	157 702
Vanderbijlpark	434 004
Vereeniging	250 511
Westonaria	160 531
Wonderboom	266 153

6.2 Employment

Employment is basic to the understanding of socio-economic conditions: it is through employment that the vast majority of people earn an income, and employment is also crucial to the psychological well-being of people. The fact that South Africa's formal economy has only been able to provide employment to about half of all job seekers is an indictment of South Africa's poor economic development record.

Gauteng is the economic heartland of South Africa and as such offers more than a quarter of all job opportunities in the country. Despite this Gauteng still has an unemployment problem and it was estimated that in 1994 almost 29% of the workforce was unemployed (October Household Survey, CSS 1995). The severity of unemployment varies considerably across magisterial districts in the province. According to the map Soshanguve has the lowest employment level with only 58% of persons in the 15-64 age group employed, while Oberholzer and Westonaria have the highest rate of 86%.

The southern parts of the province (Vanderbijlpark, Vereeniging, Heidelburg and Nigel) display low levels of employment. Economic decline between 1981 and 1991 in these magisterial districts would account for this as their manufacturing sector suffered as a result of the decline in mining in the region.

Despite the decline in the mining sector, the two districts with the highest levels of employment (Westonaria and Oberholzer) are in fact dominated by mining. This paradox is explained by the fact that mining is labour intensive and these regions tend to import migrant labourers and thus increase their rates of employment. With the decline of mining, they "export" their retrenched migrant workers to their places of origin.

A number of the magisterial districts in central Gauteng (e.g. Randburg and Pretoria) have high employment rates due to the wealthy residential areas in these districts. Furthermore these districts have enjoyed rapid economic growth, Randburg being the leader with a growth rate of 4,9% p.a. between 1981 and 1991.

Defining and measuring employment and unemployment is an enormously complex issue: (un)employment statistics need to be carefully evaluated, and placed in their correct context. The main advantage of using the census as a source of data on (un)employment is its breadth of coverage, even though it provides less precise information than can be gathered in more focused employment surveys. Apart from the general inaccuracies in the census data (for example, the underenumeration in areas affected by violence), there are also distortions in (un)employment data: for example, certain categories of employed people (e.g. transport workers) would be more likely to be underenumerated, while certain categories of unemployed persons may also have been underenumerated.

It is also important to note that according to the census definition, most people involved in the informal sector are defined as employed, even though many may have been pushed into this sector because of their inability to find formal sector employment.

Special employment programmes could be effectively used to alleviate unemployment in areas of high unemployment. The benefit of such projects is that they can target specific sectors of the population to provide short-term income-generating and skills-learning opportunities, while at the same time meeting the need for crucial social and physical infrastructure. These projects would require detailed local planning, based on comprehensive information about, for example, the local skills profile of the unemployed. The magisterial districts in the southern parts of Gauteng are regions that could benefit from such programmes.

P. Hall and A. Whiteford
Human Sciences Research Council

MAP 2 : PERCENTAGE 15 TO 64 YEAR OLDS EMPLOYED

Source : 1991 Census

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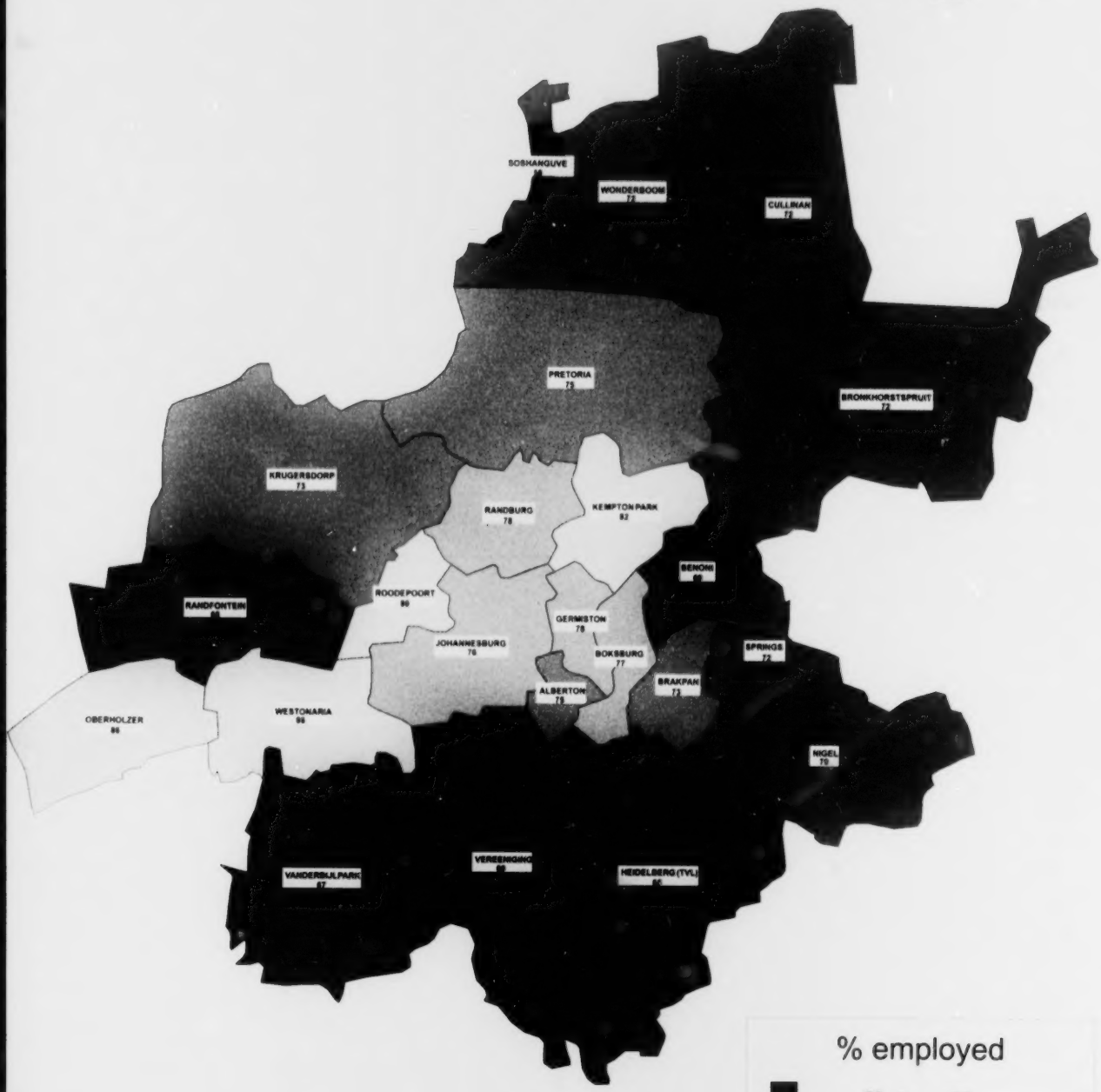

% employed

58 to	69
69 to	72
72 to	75
75 to	78
78 to	86

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Table 2 Percentage 15 to 64 year olds employed

DISTRICT	ECONOMICALLY ACTIVE	15 TO 64 YEARS	% 15 TO 64 YEARS OLD EMPLOYED
Alberton	194 659	261 228	75
Benoni	137 733	199 935	69
Boksburg	107 451	139 310	77
Brakpan	64 015	88 031	73
Bronkhorstspruit	18 095	25 063	72
Cullinan	17 094	23 897	72
Germiston	101 066	129 012	78
Heidelberg (GP)	32 349	49 622	65
Johannesburg	842 899	1 102 470	76
Kempton Park	211 911	258 715	82
Krugersdorp	102 575	139 652	73
Nigel	41 785	59 746	70
Oberholzer	128 417	148 900	86
Pretoria	367 410	493 062	75
Randburg	197 376	254 650	78
Randfontein	55 190	81 163	68
Roodepoort	129 874	162 406	80
Soshanguve	53 220	92 039	58
Springs	79 658	110 383	72
Vanderbijlpark	192 424	286 479	67
Vereeniging	115 675	166 661	69
Westonaria	107 528	125 338	86
Wonderboom	132 719	185 451	72

6.3 Functional literacy and adult literacy

It is strongly recommended that the 1991 Census figures be compared with those in the report commissioned by the Joint Education Trust on "ABE capacity building research" compiled by the University of Natal, Centre for Adult Education (Pietermaritzburg) and the Department of Adult and Community Education (Durban); 1996. The figures in the latter report are based on the household survey undertaken in October 1994 by the Central Statistical Service. They are likely to be more accurate than those of the 1991 Census because of the problems with the way in which the census was conducted and the areas excluded. The report's definition of literacy is also more widely accepted as appropriate by all stakeholders in the field of adult education.

Given the general nature of these maps (Maps 3 and 9), the only significant factors illustrated are the rates of literacy (8) and the higher levels of education (9) in urban areas as opposed to peri-urban and rural areas, as well as the big differentials between urban, peri-urban and rural areas. The causes of the high levels of illiteracy include

- the lack of free and compulsory education for blacks;
- the high levels of poverty among the black population resulting in people having to leave school after a year or two to help bring in income or because there was not enough money to continue paying for education;
- the poor quality of education resulting in low levels of literacy or levels not being sustained over time;
- the high dropout rates before a sufficient platform of general education could be acquired;
- the inadequate provision of services resulting in many areas not having schools or the schools being too far away and there being no money to pay for transport;
- the low market absorption rates and poor and irrelevant education resulting in ambivalent attitudes towards the importance of education.

The maps would be far more useful if they included a more detailed breakdown of gender, race, age (to take account of out-of-school youth), and intradistrict variations. Even in a small region the scale of illiteracy often varies markedly depending on the distances from city or township centres. The physical proximity of schools and availability of transport to schools are obvious reasons for these variations. In the longer term it would be useful to have the breakdown between different economic sectors and job categories per district in Gauteng. It would also be useful to link levels of education and household incomes. More detailed breakdowns would more accurately reflect the apartheid legacy and would therefore be more useful as a planning tool.

Using the 1991 Census figures is problematic because it is generally accepted that any projected statistics for rural and peri-urban areas are particularly inaccurate. As the 1991 Census mechanisms were not sensitive to language and educational levels, the projected figures are questionable for projecting adult illiteracy rates in rural and peri-urban areas. Nor would such figures accurately reflect population shifts and the increasing growth of informal settlements as areas urgently needing adult literacy programmes. This is particularly important since people who move to informal

settlements are often work seekers in the economically active age group with low levels of literacy.

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RDPP Unit
Department of Education

MAP 3 : PERCENTAGE FUNCTIONAL LITERACY : ADULTS WITH AT LEAST STANDARD 4 EDUCATION

Source : 1991 Census

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Table 3 Percentage functional literacy: adults with at least Standard 4 education

DISTRICT	15 TO 64 YEARS	% FUNCTIONAL LITERACY
Alberton	261 228	61
Benoni	199 935	63
Boksburg	139 310	66
Brakpan	88 031	60
Bronkhorstspruit	25 063	39
Cullinan	23 897	47
Germiston	129 012	75
Heidelberg (GP)	49 622	46
Johannesburg	1102 470	67
Kempton Park	258 715	63
Krugersdorp	139 652	59
Nigel	59 746	52
Oberholzer	148 900	51
Pretoria	493 062	73
Randburg	254 650	68
Randfontein	81 163	55
Roodepoort	162 406	70
Soshanguve	92 039	57
Springs	110 383	65
Vanderbijlpark	286 479	57
Vereeniging	166 661	59
Westonaria	125 338	50
Wonderboom	185 451	62

6.4 Poverty gap

Gauteng is the economic powerhouse of South Africa and the wealthiest province. Indeed, almost 36% of the national total personal income is earned in Gauteng and the per capita income is 30% higher than the next wealthiest province i.e. the Western Cape. Measures of income in aggregate or average terms are often misleading, however, and despite the concentration of wealth in Gauteng, the province has the fourth largest share of poverty among the nine provinces (Whiteford, Posel & Kelatwang, 1995).

The simplest measure of poverty of a region is the number of households living below the poverty line. At the time of the 1991 Population Census just less than a quarter of all households in Gauteng were living in poverty. While the poverty headcount ratio is a convenient measure of poverty, it is insufficient as it only gives an indication of the incidence of poverty. A reliable measure of poverty should include the depth of poverty: in other words a reliable measure of poverty gives not only the proportion of households below the poverty line, but also how far such households are below the poverty line. A measure that incorporates both incidence and depth is the poverty gap, which is calculated by summing the differences between the income of each poor household and the poverty line. The poverty gap is of great policy significance since it indicates the theoretical minimum government transfer to poor households needed to eliminate poverty totally. Of course, transfers are only one anti-poverty policy option available to governments. Income generating opportunities for poor people have to be created and those people must be provided with the capacity to use such opportunities.

In 1993 the total poverty gap in South Africa was just over R15 billion, which amounted to less than five percent of gross domestic product. The size of the poverty problem is thus small relative to the size of the economy, but the number of individuals involved is enormous. Gauteng's share of this total poverty gap was in excess of 10%, making it the province with the fourth biggest poverty gap.

The poverty gap of each magisterial district in Gauteng is shown in Table and Map 4. The incorporation of Soweto into Johannesburg gives this district the highest poverty gap, accounting for almost a quarter of the provincial total. Pretoria, Vanderbijlpark and Alberton have the next highest poverty gaps and collectively these districts, with Johannesburg, account for almost half of the provincial total.

The level of poverty per capita needs also to be examined as each district differs in terms of size, population totals and economic productivity. The highest levels of per capita poverty are found in the south-eastern, north-eastern and north-western peripheral areas of the province. Springs and Heidelberg in the south-east have the highest per capita poverty at R482 and R478 respectively. In the peripheral north-east and north-west are Bronkhorstspruit, Cullinan and Soshanguve with per capita poverty levels of R386, R337 and R341 respectively. There is a distinct regional imbalance in per capita poverty levels: the bulk of the burden of poverty is located in the south, the north-east and in Soshanguve in the north-west. The two lowest levels of per capita poverty are found in the west, central and north-western regions.

A closer analysis of the data shows that many of the areas with large poverty gaps have high per capita incomes, which indicates huge disparities between rich and poor

in these areas. The proximity of poor and wealthy areas is advantageous in that it enables the costs of upgrading services in poor areas to be funded from rates on properties raised in wealthy areas within the same municipal boundaries. An analysis of the new administrative areas (see *Gauteng: A socio-economic profile*, forthcoming HSRC publication) shows that in establishing the new boundaries there has been a reasonably successful mix of wealth and poverty in each area. There are a number exceptions, however, the most notable being the administrative areas that fall into the Vanderbijlpark and Vereeniging magisterial districts. These areas have large concentrations of poverty with relatively little wealth. Regional planners will have to take cognisance of this and ensure that the economies of these regions are developed and employment opportunities created.

Data sources and calculation of poverty gap

The measuring of a poverty income requires a definition of the same and a premise that any household earning less than that income is deemed to be in poverty. There is no official poverty income in South Africa but one of the most commonly used yardsticks is the minimum living level (MLL) calculated by the Bureau of Market Research. At the time of the census the MLL was equal to R7 505,16 per annum for an average-sized household. A poverty income of R7 000 is used in this study for the sake of convenience, since it corresponds with the lower limit of a census income category.

The poverty gaps were estimated from 1991 Population Census data. A poverty gap for each poor household was calculated by subtracting the income of the household from the poverty income. The total poverty gap for each magisterial district was calculated by summing the poverty gaps of all poor households.

There is some concern that the census underestimated the incomes of poor households as it is very often difficult for these households (especially those involved in subsistence agriculture and informal sector operations) to estimate their income accurately. This could have led to an overestimation of the extent of poverty.

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Human Sciences Research Council

MAP 4 : POVERTY GAP PER CAPITA

Source : Whiteford et al 1995

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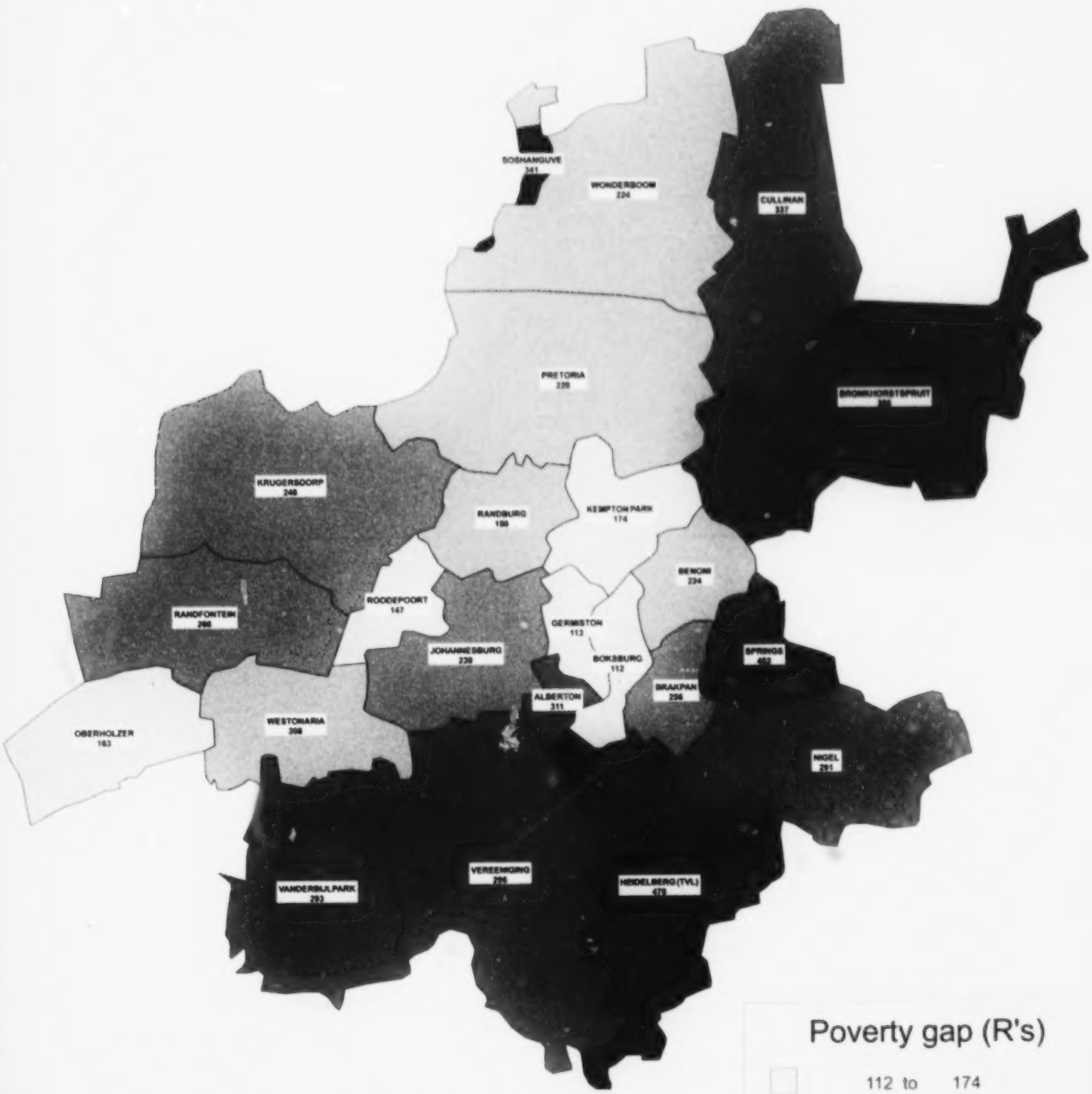

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Poverty gap (R's)

112 to	174
174 to	224
224 to	268
268 to	337
337 to	482

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Table 4 Poverty gap per capita

DISTRICT	TOTAL POPULATION	POVERTY GAP (R1000)	PER CAPITA POVERTY GAP (R)
Alberton	367 929	114 543	311
Benoni	288 629	64 764	224
Boksburg	195 905	21 961	112
Brakpan	130 463	33 355	256
Bronkhorstspruit	38 605	14 895	386
Cullinan	32 006	10 788	337
Germiston	171 541	19 356	113
Heidelberg (GP)	77 055	36 817	478
Johannesburg	1 574 631	376 809	239
Kempton Park	354 787	61 740	174
Krugersdorp	196 213	48 723	248
Nigel	92 881	27 042	291
Oberholzer	177 768	28 927	163
Pretoria	667 700	146 684	220
Randburg	341 430	61 301	180
Randfontein	116 405	31 161	268
Roodepoort	219 149	32 220	147
Soshanguve	146 334	49 865	341
Springs	157 702	76 042	482
Vanderbijlpark	434 004	127 309	293
Vereeniging	250 511	73 857	295
Westonaria	160 531	33 435	208
Wonderboom	266 153	59 671	224

6.5 Dependency ratio

The dependency ratio as depicted in the map reflects the dependency of non-economically active persons on those that are economically active. It is an issue of great importance in South Africa given the fact that more than 40% of the population is either younger or older than the 15-64 working age groups. This is compounded by the fact that a large and increasing portion of the potentially economically active population is unemployed.

Gauteng is the centre of economic activity and employment in South Africa and hence is a magnet for job seekers. This concentration of economically active people means that the dependency ratio in Gauteng is lower than in other provinces. Indeed, the magisterial district with the highest dependency ratio in Gauteng has a ratio of 1.38, while some magisterial districts in rural KwaZulu-Natal have dependency ratios in excess of 30 (Krige: KwaZulu-Natal service provision document).

All magisterial districts in Gauteng have relatively low dependency ratios with the range varying from 0,38 to 1,38. Various factors impact on the dependency ratio:

- Migrant worker hostels tend to lower the dependency ratio since they house a high concentration of economically active persons who are not accompanied by their (not-economically active) families. The districts with the lowest ratios, Oberholzer and Westonaria, are dominated by mining and the mines in the province each have a number of hostels. Kempton Park and Germiston also have low dependency ratios due to the presence of hostels.

- Districts with large white communities tend to have lower dependency ratios since the white population has an older age structure than the other race groups and hence tends to have a high proportion of the community in the economically active age group. In addition, the participation rate of white adults in the economically active population is high because of the relatively low levels of unemployment among the whites. Districts with low ratios because of the concentration of whites include Roodepoort, Randburg, Pretoria, Boksburg and Johannesburg.

- Districts with sizeable rural components tend to have high dependency ratios since rural areas tend to have a concentration of old and very young people. Adults of working age tend to move into the urban areas to seek work, leaving behind the elderly, who often look after the children of people working in the urban areas. Districts with high dependency ratios owing to the presence of rural communities include Bronkhorstspruit, Cullinan, Wonderboom, Krugersdorp, Randfontein, Vanderbijlpark, Vereeniging, Heidelburg and Nigel.

Data sources and calculation of dependency ratio

The dependency ratios were calculated from the 1991 Population Census data. The ratio was calculated by subtracting the number of economically active persons from the number of non-economically active persons and dividing this subtotal by the number of economically active persons. The distinction between the economically and non-economically active is somewhat arbitrary since the definition of economically

active includes unemployed persons who are seeking work, while the definition of non-economically active includes those who have stopped looking for work.

It is likely that there have been some substantial population movements since the data was collected in 1991 and these movements could have some bearing on the dependency ratios. The areas particularly affected would be those which have seen the emergence of informal settlements. Since informal settlements tend to have a high concentration of children, the presence of these settlements tends to raise the dependency ratio. Districts that have seen substantial growth of informal settlements include Vanderbijlpark, Vereeniging, Kempton Park and Soshanguve.

P. Hall and A. Whiteford
Human Sciences Research Council

MAP 5 : DEPENDENCY RATIO

Source : CSS 1991

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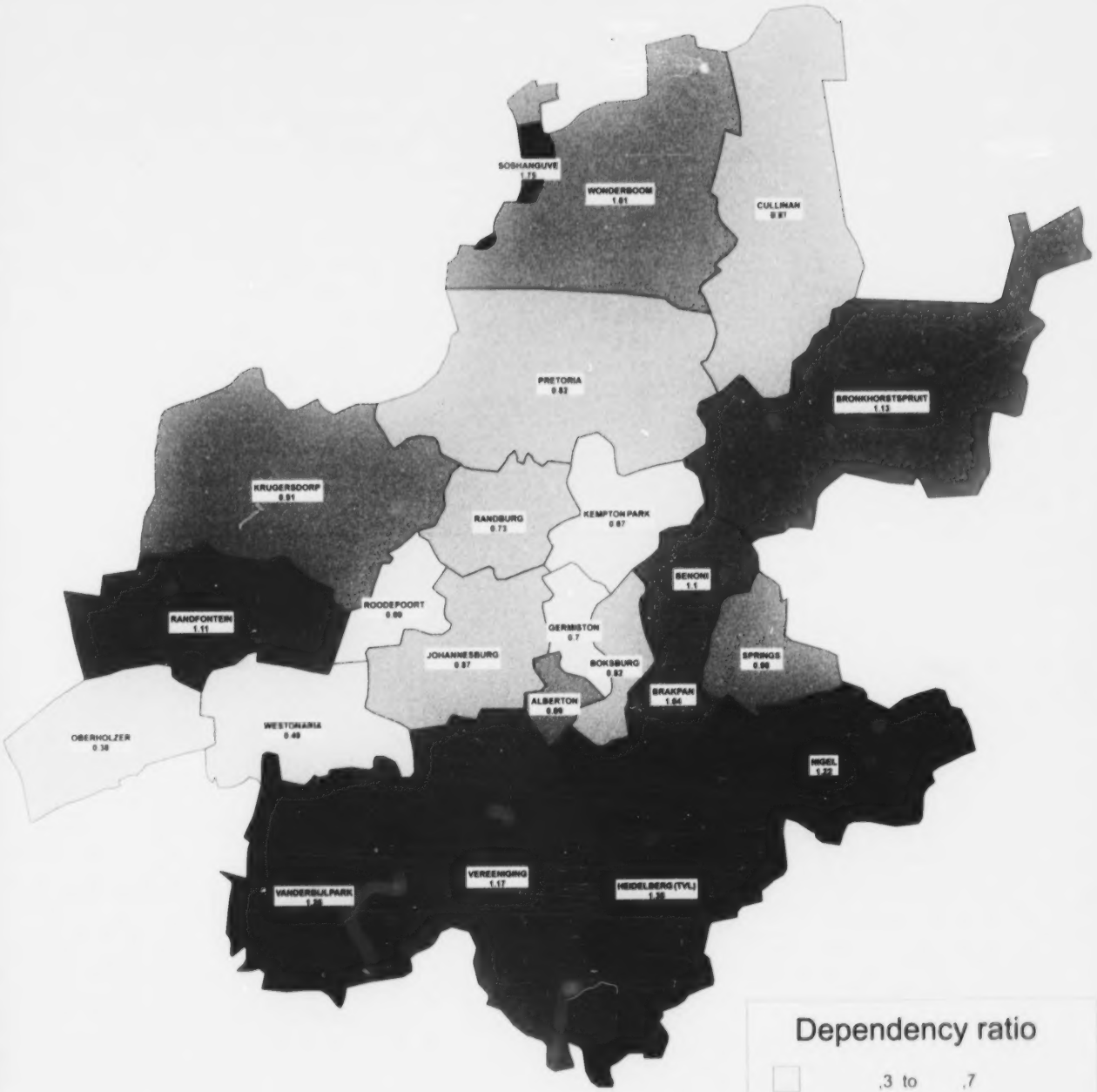

Dependency ratio

,3 to	,7
,7 to	,8
,8 to	1,0
1,0 to	1,1
1,1 to	1,7

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Table 5 Dependency ratio

DISTRICT	TOTAL POPULATION	ECONOMICALLY ACTIVE POPULATION	DEPENDENCY RATIO
Alberton	367 929	194 659	0,9
Benoni	288 629	137 733	1,1
Boksburg	195 905	107 451	0,8
Brakpan	130 463	64 015	1,0
Bronkhorstspruit	38 605	18 095	1,1
Cullinan	32 006	17 094	0,9
Germiston	171 541	101 066	0,7
Heidelberg (GP)	77 055	32 349	1,4
Johannesburg	1 574 631	842 899	0,9
Kempton Park	354 787	211 911	0,7
Krugersdorp	196 213	102 575	0,9
Nigel	92 881	41 785	1,2
Oberholzer	177 768	128 417	0,4
Pretoria	667 700	367 410	0,8
Randburg	341 430	197 376	0,7
Randfontein	116 405	55 190	1,1
Roodepoort	219 149	129 874	0,7
Soshanguve	146 334	53 220	1,7
Springs	157 702	79 658	1,0
Vanderbijlpark	434 004	192 424	1,3
Vereeniging	250 511	115 675	1,2
Westonaria	160 531	107 528	0,5
Wonderboom	266 153	132 719	1,0

6.6 Population density

Population density patterns correlate very closely with the patterns of population distribution. The mean (39,0 persons per km^2) and the median (47,1 persons per km^2) stand in marked contrast to the national average of 33,3 persons per km^2 thus making Gauteng the most densely populated province, with KwaZulu-Natal having the second highest density of 93,5 persons per km^2. Alberton (the densest district at 3 375 persons per km^2), Johannesburg and Germiston (over 1 000 persons per km^2) form the core of the Witwatersrand and lie at the heart of the population pattern. This core is surrounded by an area of marked population density in Roodepoort, Randburg, Kempton Park, Benoni and Boksburg (850-1000 persons per km^2). Extending eastward are Brakpan and Springs with lower densities of 577 and 472 persons per km^2 respectively. To the west population densities are lower than the provincial average and range from 320 - 144 persons per km^2 (Oberholzer, Westonaria, Krugersdorp and Randfontein). There is a gap in the province's population density distribution at the 600 - 850 persons per km^2 level. No districts fall into this category.

Greater Pretoria has a markedly lower population density (486 in Pretoria and 197 in Wonderboom) in stark contrast to Soshanguve with the province's third highest population density of 2 251. This population concentration is a result of the former homeland administration policy.

The Vaal area comprising Vanderbijlpark (above the provincial average of 470) and Vereeniging (among the lowest at 158) display a pattern similar to that of Greater Pretoria without a small densely populated black area like Soshanguve, although it does have high-density township areas.

Nigel, Heidelberg, Cullinan and Bronkhorstspruit, as outlying areas, have densities of less than 101 persons per km^2, the latter two being the only districts in Gauteng below the South African national average of 33,3 persons per km^2.

Contrary to expectations, larger areas do not have higher population numbers or densities. There is a negative correlation between size and density is negative (r^s=0,79) and no statistical association between area and population (r=0,054).

This hierarchy of population spread clearly reflects the economic structure of the province and the universal trend of population concentration at the economic cores - Pretoria, the Witwatersrand and the Vaal area, (Vereeniging and Vanderbijlpark) hence the nickname PWV. Mining and industry initially stimulated employment opportunities and subsequently there was growth in the tertiary sector. Furthermore, there is a decrease in population numbers and density away from these central cores towards the outlying areas. Nevertheless the link between Gauteng and the North-West province is evident from the concentration of people in Soshanguve, the place of residence of many of Pretoria's workers. Generally, however, the stronger the economic core (Johannesburg / Germiston / Alberton), the greater the concentration of people and the greater the impact of urbanisation and concomitant industrialisation. The larger population of Soshanguve, a settled community, is attributed to fact that the continuing effect of industrial decentralisation although this plays a decreasing role in the local economy.

Concluding comment

Population distribution patterns with regard to size and density reflect two major forces - the development of a core and its periphery, and the resource base in terms of climatic, mining, industrial and farming potential.

This analysis of the population of Gauteng supports the proposed subdivision of the province into five regions: Greater Johannesburg (including Johannesburg, Randburg and Roodepoort), Greater Pretoria (Pretoria, Wonderboom, Soshanguve, Cullinan and Bronkhorstspruit) the Vaal (Vanderbijlpark and Vereeniging), the West Rand and the Greater East Rand (Meintjies, *et al.*, 1995). It seems feasible that this could form the basis for any other further analyses with regard to the people of the region. Selected examples of data that could be significant socio-economic indicators and evidence of the effects of population dynamics are tabulated as an appendix to highlight the main features of the province. The data stress the important features of clear spatial links and geographical diversity.

Gauteng's location as well as its economic structure makes it especially significant in terms of the national spatial economy. It has strong links with all other provinces, especially the North-West, Mpumalanga and Northern Province, neighbouring countries and the wider international community. Economic and cultural ties are also strong within the province – inter- and intraregional integration is part of its history and geography.

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MAP 6 : POPULATION DENSITY

Source : 1991 Census

HSRC
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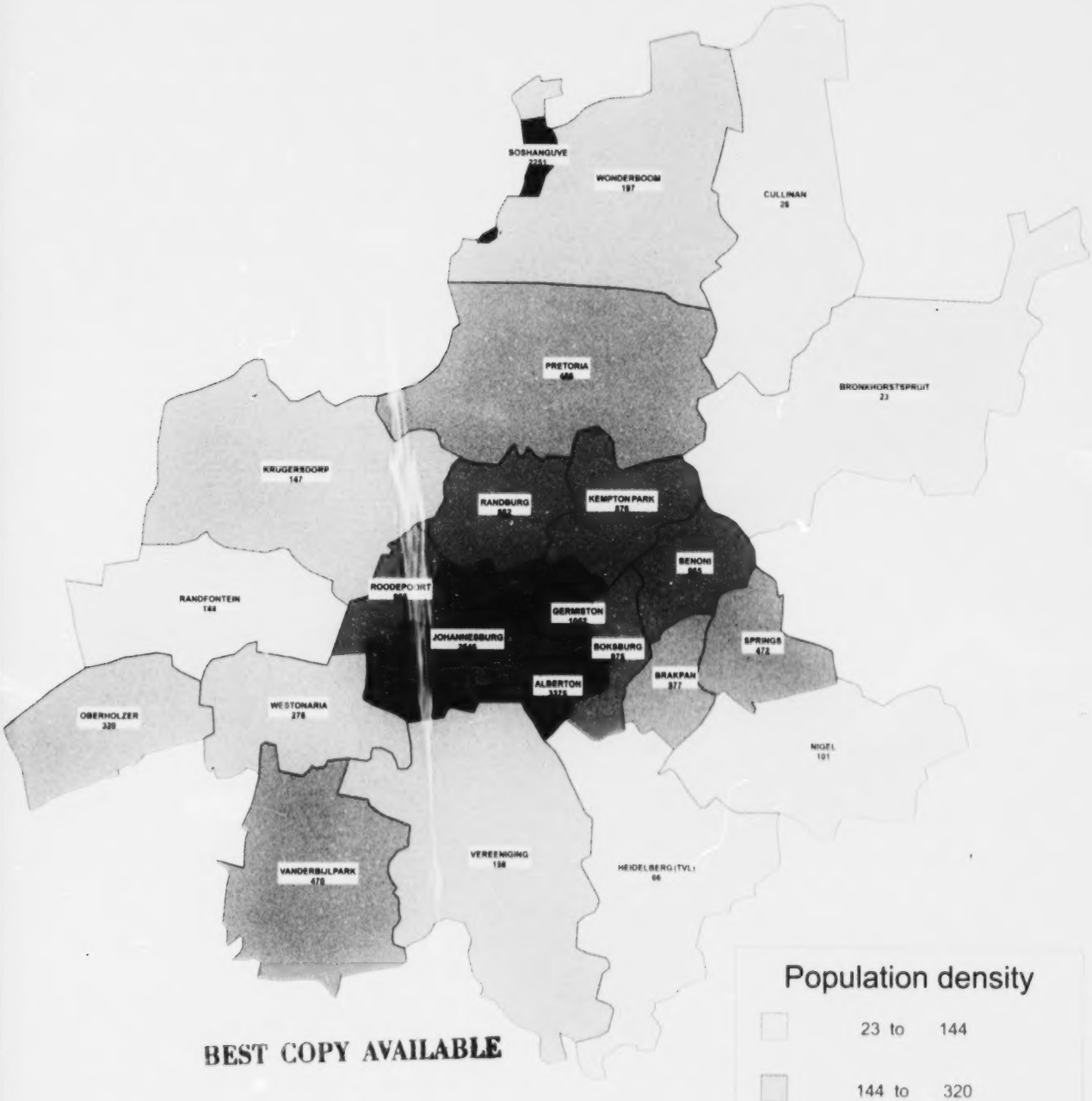

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Table 6 Population density

DISTRICT	TOTAL POPULATION	AREA (km²)	POPULATION DENSITY
Alberton	367 929	109	3 375
Benoni	288 629	299	965
Boksburg	195 905	201	975
Brakpan	130 463	226	577
Bronkhorstspruit	38 605	1 685	23
Cullinan	32 006	1 245	26
Germiston	171 541	163	1 052
Heidelberg (GP)	77 055	1 172	66
Johannesburg	1 574 631	595	2 646
Kempton Park	354 787	405	876
Krugersdorp	196 213	1 333	147
Nigel	92 881	921	101
Oberholzer	177 768	555	320
Pretoria	667 700	1 375	486
Randburg	341 430	387	882
Randfontein	116 405	807	144
Roodepoort	219 149	227	965
Soshanguve	146 334	65	2 251
Springs	157 702	334	472
Vanderbijlpark	434 004	923	470
Vereeniging	250 511	1 587	158
Westonaria	160 531	582	276
Wonderboom	266 153	1 352	197

6.7 Index of Social Needs

As outlined in Section 4.2 high index scores are indicators of underdevelopment. The social variables selected to develop the Needs Index were the poverty gap, pupil:teacher ratio, dependency ratio, total households, and population density. A district not requiring development intervention based on this Social Needs Index would have a low index score and the following social profile: a low poverty gap, low pupil:teacher ratio, low dependency ratio, low population densities and a high number of households. Conversely an underdeveloped district would have a high poverty gap, high pupil:teacher ratio, high dependency ratio, high population densities and a low number of households.

Soshanguve (86) in the north has on average the worst social conditions in the province. Vanderbijlpark (73), Alberton (70) and Benoni (67) are the next three low socio-economic status districts. These districts are in the south and south-east of the province. Springs, Brakpan, Heidelberg and Nigel all score between 57 and 62 points on the Social Needs Index. On average social conditions are poorest at the northern, southern and south-eastern peripheries.

The most favourable social conditions are found in a cluster of districts extending from Oberholzer, in the west, to Pretoria.

There are stark contrasts between some of the most underdeveloped districts and their immediate neighbours. Soshanguve's nearest neighbour, Wonderboom, has better social conditions by 31 Social Needs Index points. Social conditions in Vanderbijlpark are far worse than in Westonaria, by 35 index points. In Germiston social conditions are 35 index points better than in Alberton. Benoni is 21 index points less developed than Kempton Park.

MAP 7 : INDEX OF SOCIAL NEED

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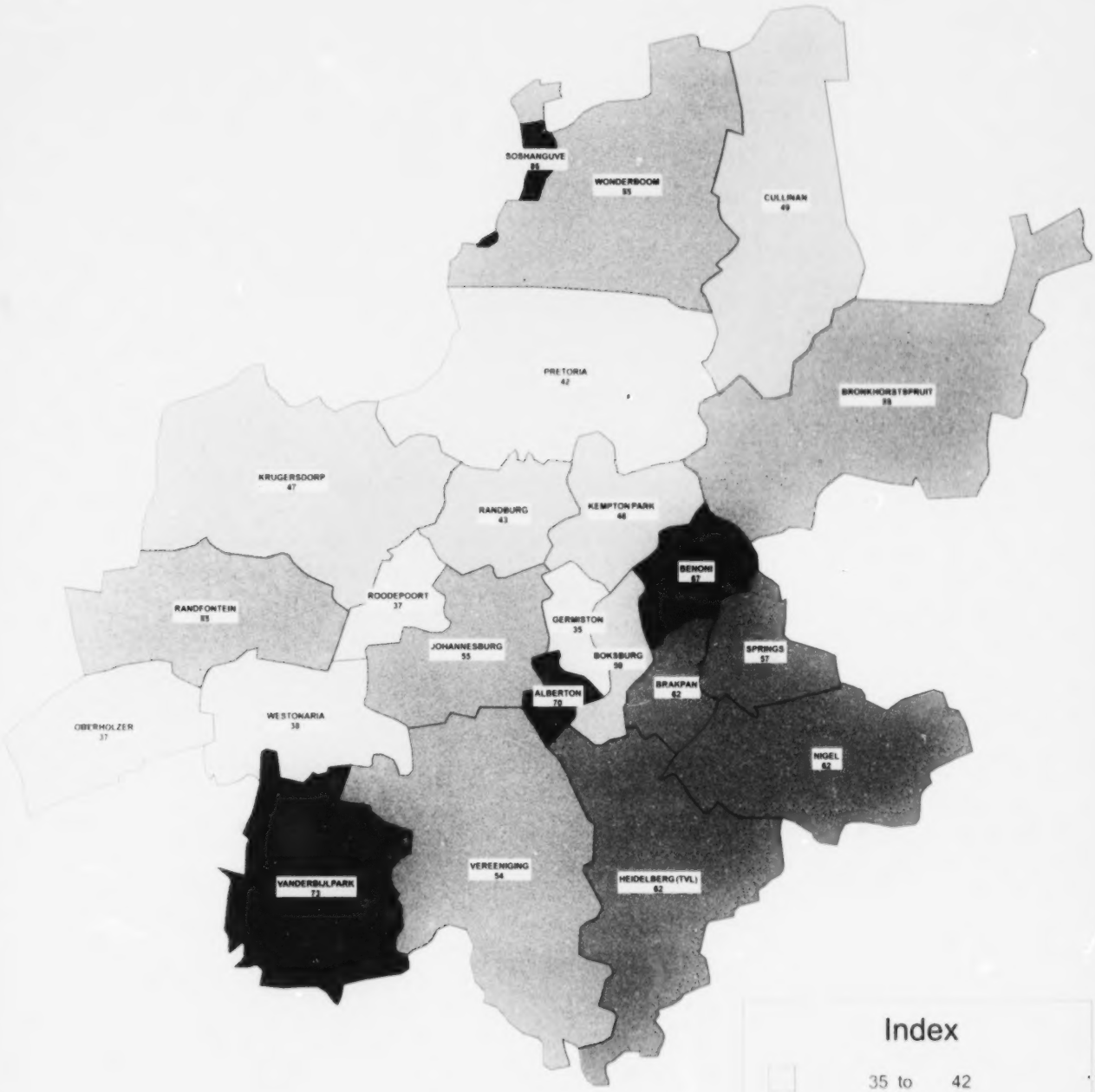

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Table 7 Index of Social Needs

DISTRICT	SOCIAL INDEX
Soshanguve	86
Vanderbijlpark	73
Alberton	70
Benoni	67
Brakpan	62
Nigel	62
Heidelberg (GP)	62
Springs	57
Johannesburg	55
Randfontein	55
Wonderboom	55
Bronkhorstspruit	55
Vereeniging	54
Boksburg	50
Cullinan	49
Krugersdorp	47
Kempton Park	46
Randburg	43
Pretoria	42
Westonaria	38
Roodepoort	37
Oberholzer	37
Germiston	35

7

PROVISION OF SERVICES IN GAUTENG

7.1 Education

The role of education in meeting the basic needs of people must be grounded in an analysis of the key elements of a growth and development strategy based on national and provincial development priorities.

This growth and development path should involve a disaggregated strategy that would

- invest in the people of Gauteng as a key pillar of the growth and development strategy;
- meet the demands of diverse economic and wealth-creating activities ranging from employment in the forml sector (mining, manufacturing, finance, transport, agriculture, etc. with their diverse needs) to employment in a range of activities that are outside the formal sector such as small businesses, the informal sector, and subsistence activities;
- increase absorption rates in the labour mar...t;
- redress inequalities and provide opportunities for improved lifestyles among the people;
- achieve peace and stability in the society by addressing the vast inequalities in wealth and income levels and opportunities. .Gauteng needs a growth and development path that seeks to build the economy by promoting social, political and economic equity and so contribute to greater social and political equity;
- transform teaching and learning practices in the schools to promote economic growth and social and political stability;
- promote inward industrialisation and self-sufficiency;
- promote sustainable (infrastructure) development;
- promote stable communities.

Implications of the growth and development strategy for the role of education

Gauteng as the main engine of the Southern African economy needs to invest in people as a key pillar of its democratising growth and development strategy for the following reasons:

- Raising the education and skills profiles of its people can contribute to the reduction of poverty and a more equitable distribution of income by equalising opportunities for achieving improved lifestyles.
- Raising the education and skills profiles of its people is necessary for creating employment through the establishing enterprises (small and informal) geared to meeting local consumer needs. In the present climate of growing unemployment, the education and training system needs to supply the millions of unemployed adults and the growing numbers of school leavers who will not be able to find jobs in the formal sector with the skills and knowledge required for self-employment or improved levels of subsistence economic activity.
- A solid educational system provides the foundation for higher levels of skills training and technological innovations. This is crucial in terms of improving the country's international competitiveness. (The latest World Bank Competitiveness Report (1994) ranked South Africa last out of 14 newly industrialised countries on human resource development.)
- Education is needed to promote critical and creative thinking, self-discipline, independent learning, empowerment, respect for the dignity of others, and a commitment to lifelong learning, along with values and attitudes that are in line with the growth and development vision.
- Education facilitates the growth of the economy by contributing to many of the factors that are essential for economic growth such as a stable democracy, peace and security, efficiency in government, stable communities, etc.
- Education and human resource development strategies underpin the capacity to sustain infrastructure development programmes and strengthen the new democracy on the basis of knowledge, skills, values and attitudes that will be promoted through educational programmes.
- Education contributes to the economic, social, cultural, and political dimensions of development and therefore has a transversal role in relation to all the political priorities.

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7.1.1 Pupil:teacher ratios

The map of African pupil:teacher ratios gives only a superficial indication of the fact that the distribution of educational services is inequitable. However, the figures presented could lead to distorted conclusions unless further information is provided. The following major problems have been noted:

- The map does not reflect an analysis of population shifts and the possible implications of these for education.
- The analysis given should also be overlaid with an analysis of the location of informal settlements which continue to appear near urban and in peri-urban areas.
- There is no separation of figures for enrolment at primary and secondary levels.
- There is a move away from township schools to schools in the suburbs.
- Given the movement from township schools to state-aided schools in suburbs, many of the state-aided schools probably have between 33% - 60% African pupils enrolled. For the figures in this map to be useful some forms of comparison are required. To reflect changed and new realities it may be more useful to describe ratios in township schools as opposed to African pupil ratios since the latter implies that African pupils are not present in significant numbers in state-aided schools. For comparative purposes therefore it would probably be more useful to compare ratios of township schools and schools in other areas. These then need to be compared with the agreed pupil:teacher ratios, i.e. it would be necessary to reflect the different ratios between state schools and state-aided schools per district. (This analysis could be based on the 10th day school statistics.) (See the section on guidelines for an analysis of staffing across the different types of schools although this has not yet been done by district.)
- The magisterial districts with the lowest average number of pupils per school have the greatest numbers of farm and rural schools. Schools in these areas are grossly underresourced in terms of facilities and human resources. Access to schooling in large parts of these districts continues to be a major problem owing to the great distances which children have to travel to go to school. However, as long as the GIS maps do not include figures on the projected totals of the same age cohorts in these districts, it is not possible to estimate the numbers of children not in school.
- The average numbers of pupils in these magisterial districts may be low, but in certain parts of these districts there is gross overcrowding and multilevel teaching as a result of a lack of resources. In other words many of the worst schools in terms of facilities and resources are found in the districts that have the lowest average pupil numbers per school.
- The use of average numbers of pupils also does not allow the identification of the inequitable distribution of resources within magisterial districts as a result of the historically unequal provision of education under apartheid.
- Combining average enrolments for secondary and primary schools is problematic because it is impossible to pick up different rates of enrolments at different levels of the system. The collapsed figures do not allow for the monitoring of dropout rates at different levels of the system which is necessary from a planning perspective.
- Pupil:teacher ratios differ enormously across and within districts as a result of apartheid imbalances. This distribution is currently being analysed by the department in order to identify areas where teachers need to be redeployed in line

with the pupil:teacher ratios that have been agreed to in the Education Labour Relations Council.

- Mapping the density of enrolment requires an analysis of population shifts and the implication of these - particularly in Gauteng - in order to be of use in development planning. It is therefore suggested that an additional map detailing the districts that are in crisis based on the report of population shifts and the implications of these for the provision for education be included in the GIS mapping. (See extract below from a report produced by the MEC for Education in Gauteng.)

  "A recent report on the impact of the population movement on school enrolment and the need for schools has highlighted the following major problems regarding the distribution of educational services in the province. This report is based on the 10th day school statistics for 1996.

  "Of our 18 educational districts, 8 are in crisis. In these 8 districts, 217 schools are seriously overcrowded, and 58 600 students are without classrooms. These areas include the Heidelberg district, which has the lowest average pupil enrolments according to HSRC figures, where 36 schools are over capacity and there are 5 115 learners without classrooms. Other districts like the Vaal and Benoni districts that are described as having 'middle' average ratios also have areas where there is a major crisis in terms of the provision of classes. For example in the Vaal 20 595 learners are without classrooms and 40 schools are over capacity. In Benoni, there are 8 282 learners without classrooms and 31 schools that are over capacity. Even in the Bronkhorstspruit district that has the lowest average enrolment, population shifts are already placing enormous strains on the present schools and it is estimated that the projects growth in Tethabiseng and Zithobeni are 28,2% and 20,6%. Refilwe is growing at a rate of 8,7% per annum."

Variable service accessibility between districts

A comprehensive response to this question requires an analysis of the district of the present pupil:teacher ratio in each district, as well as an analysis of the distribution of facilities such as administration blocks, classrooms, toilets, specialised facilities, sports fields, etc. This analysis is currently being undertaken by the department based on figures provided in the 10th day school statistics. To date the only detailed analysis of inequalities in the provision of services completed has focused on the provision of classrooms and the number of learners who do not have classrooms. The calculations in the latter report were based on a pupil:teacher ratio of 40:1 in primary schools and 35:1 in secondary schools. In terms of this definition, a school that has an occupancy greater than 100% is being overutilised, while a school that has an occupancy under 100% is being underutilised.

The report summarised the educational situation in the province as follows:

- Eight educational districts are in crisis: N2 (Pretoria East and Mamelodi), N4 (Soshanguve/Akasia), N6 (Tembisa/Kempton Park), N7 (Randfontein/Oberholzer/Westonaria), S1 (Benoni/Brakpan), S2 (Vaal area), S3 (Orange Farm area), and S4 (Alberton/Heidelberg). In these 8 districts, 217 schools are seriously overcrowded, and 58 600 students are without classrooms.

- The remaining districts, while not as critical are all similarly overcrowded and have classroom shortages. In particular there are areas like C1 (Soweto South/Lenasia), C2 (Soweto Central and JHB central), C4 (Soweto West, JHB West), C5 (Randburg/Alexandra), C6 (Vosloorus, Dawn Park, etc.), N1 (Pretoria South East to Bronkhorspruit), N3 (Pretoria Central, East and Attridgeville), N5 (Dobsonville; Roodeport/Krugersdorp/Magaliesburg), and S5 (Springs/Nigel).

- In all areas the crises are compounded by the fact that the affected communities are poverty-stricken and without the most basic infrastructure, thus the most marginalised and needy children are being affected.

- All state-owned schools in the north of the region are full, whole state schools in the south are overutilised.

- There is a noticeable shift to the more efficient utilisation of state-aided schools.

- The statistics do not include the numbers of children who are currently outside the system and who may need access in the near future.

Reasons for variable distribution

- Historical backlogs caused by the legacy of apartheid resulted in enormous imbalances in the distribution of human and physical resources as well as other educational facilities. In May 1995, the Gauteng Provincial Legislature voted education a budget of R4,57 billion. That amount was at least R710 million less than required for extending existing services to all learners in the province and for establishing new services. To date the department has not been able to redress inequalities significantly because the budget allocations have not been altered substantially. The most important implication of the education budget cut has been the severe limitation it has placed on the creation of new posts in schools in newly developed areas. The small number of schools in these areas have been forced to contend with very large classes.
- There is a difference between average enrolments in rural and peri-urban areas are those in urban areas where there are greater employment possibilities.
- It is estimated that there are at least 32 000 extra learners in the province's primary and secondary schools compared with 1995. A percentage of this figure can be attributed to natural population growth. However, the scale of the increase is testimony to the large scale and rapid urbanisation in the province. Gauteng is experiencing massive population shifts within and to the province as a result of the belief that the labour market in Gauteng has the capacity to absorb more people, coupled with the hope that the province's metropolitan areas will provide a better quality of life than the rural areas in and outside South Africa. The population movements within the province takes several forms: backyard dwellers in established townships are moving to new settlement areas or to the inner city

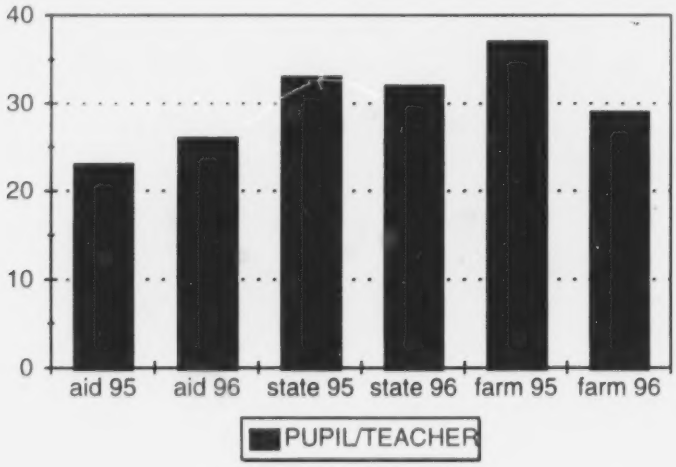
areas, mine workers are leaving hostels to establish homes for their families in informal settlements; farm workers are establishing homes in peri-urban areas, and families are moving from areas of political violence to other parts of the province.

- There is a movement from township schools to state-aided schools.
- There is a decline in enrolments in township schools.
- State schools in the province are full.
- State-aided schools in the province are underutilised.

Guidelines for the provision of education

The Gauteng Department of Education has an obligation to provide schooling for all children, irrespective of their origins. A shrinking budget and the tremendous demand for schooling, particularly in newly developing areas, are stretching the material and human resources of the department to their absolute limits.

It is anticipated that the 1996/97 budget year will see very real signs of progress in terms of access, redress and efficiency. Uniform learner:educator ratios have been fast tracked. The rapid equalisation of learner:educator ratios began in earnest in 1996 with the average learner:educator ratios rising from 23:1 to 26:1 in state-aided schools. In contrast, the average learner:educator ratios declined from 33:1 to 32:1 in state schools and from 37:1 to 29:1 in farm schools.



Along with uniform learner:educator ratios will be the movement of teachers from overstaffed schools to understaffed schools. Redeployment will ensure no secondary school will have more than a 35:1 learner:educator ratio and that no primary school will have more than a 40:1 learner:educator ratio. These ratios were agreed through the Education Labour Relations Council. For hundreds of the most disadvantaged schools in the provinces this will mean as many as twelve additional teachers. Learner:educator ratios in these schools will drop from 75:1 to 40:1 within this budget year. In overstaffed schools, 3 122 teachers will either take voluntary severance packages or will be redeployed. 3 372 teaching posts will thereby be created in understaffed schools.

Areas with special problems in terms of provision

Unless the rate of employment creation as well as the provision of adequate infrastructure and social services, in informal settlements improves, the following problems can occur:

- Continued poverty for the majority of the people
- Continued enormous disparities in wealth and living conditions
- Growing unemployment
- Increasing levels of ill health
- Massive social discontent with attendant greater levels of stress on safety and security in the province
- Increasing criminalisation
- Cynicism of democracy

It is felt that the provision of adequate educational services is crucial to minimising some of these kinds of social consequences that arise because of continued poverty and lack of hope of these problems being addressed.

Requirements to meet the future service demands of the province

With limited resources for a massive change process, the department, which will be the locus of transformation, needs to manage the change skilfully. Certain key aspects of education can act as leverage points to shift the department in the direction of the new culture of learning. A strategic phased approach to the transformation of education is needed. A major priority for the Education Department is to achieve substantial equalisation of educational resources to promote greater access and to redress past inequalities. The promise of non-discrimination in state resources will need to be implemented in a substantial way. At the same time, it will be necessary to lay the foundation for developing a vision of a new culture of learning and teaching for all education institutions.

The two aspects of this phase of transformation are inseparable. Short-term deliverables are critical to establish and maintain an educational environment in which long-term transformation is made possible. However, without a commitment to long-term transformation, rapid movement toward equalisation of resources will have little more than a cosmetic effect on the more important processes of learning and teaching.

Long-term transformation will be built on new enabling legislation and regulations, ambitious curriculum development, pilot projects which test and further develop policies and strategies, new governance structures in which all stakeholders are able to find a voice, the retraining and re-orientation of educators and departmental officials at all levels, and the establishment of a user friendly education management information system for policy decision making.

These are the building blocks which form the preconditions for realising the vision of a new culture of learning and teaching in all education institutions. They also constitute the building blocks for linking educational strategies with wider provincial development strategies.

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MAP 8 : AFRICAN PUPILS PER TEACHER

Source : CSS 1991

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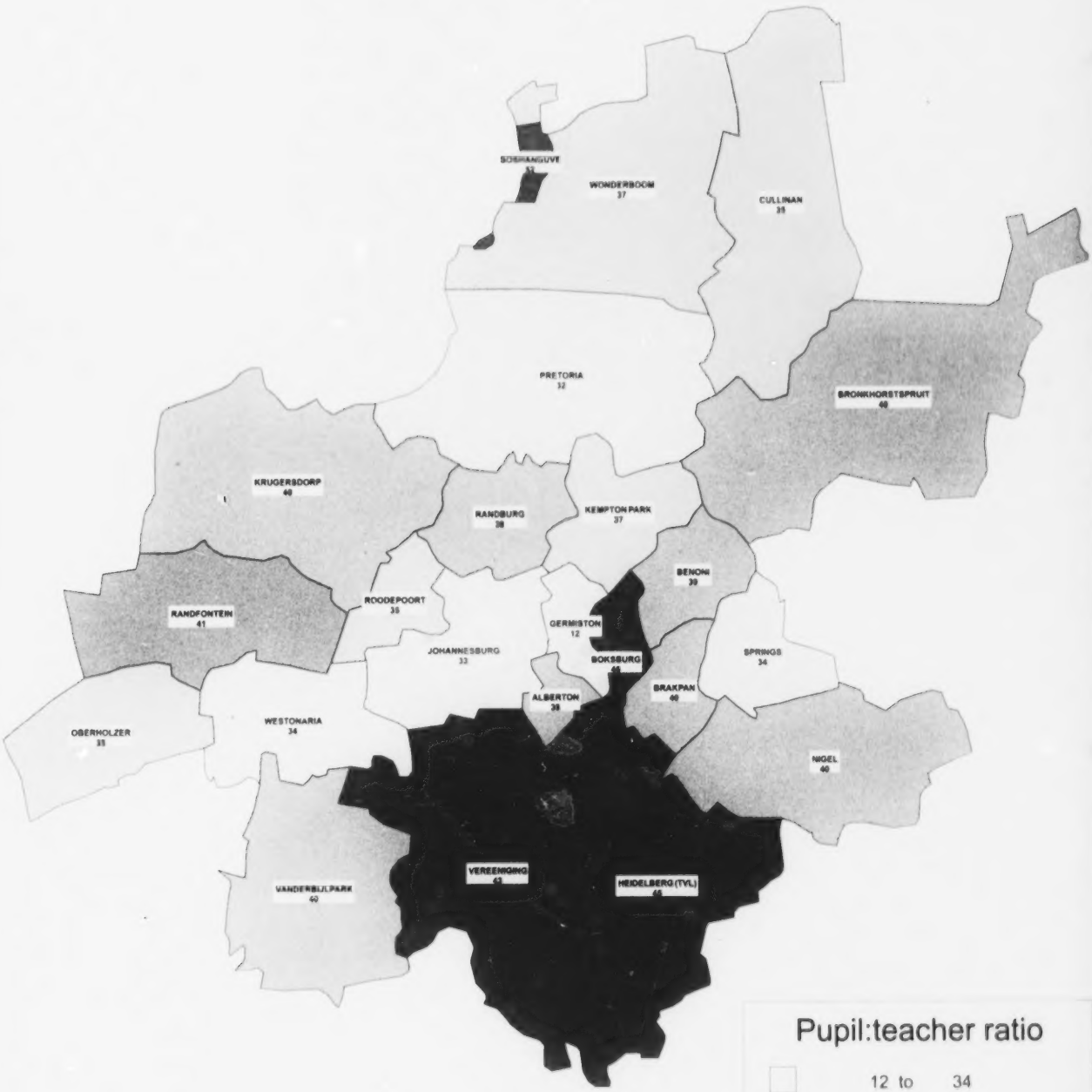

Pupil:teacher ratio

12 to	34
34 to	37
37 to	40
40 to	41
41 to	52

N

KM

25

Table 8 African pupils per teacher

DISTRICT	TEACHERS	AFRICAN PUPILS	AFRICAN PUPIL/TEACHER RATIO
Alberton	1 597	60 054	38
Benoni	1 160	45 270	39
Boksburg	384	17 845	46
Brakpan	432	17 332	40
Bronkhorstspruit	128	5 069	40
Cullinan	81	2 806	35
Germiston	1	12	12
Heidelberg (GP)	237	10 641	45
Johannesburg	6 262	205 193	33
Kempton Park	1 090	40 619	37
Krugersdorp	603	24 406	40
Nigel	369	14 804	40
Oberholzer	314	11 142	35
Pretoria	755	24 076	32
Randburg	460	17 281	38
Randfontein	314	12 731	41
Roodepoort	276	9 665	35
Soshanguve	891	46 686	52
Springs	713	24 000	34
Vanderbijlpark	2 508	99 431	40
Vereeniging	542	23 239	43
Westonaria	163	5 603	34
Wonderboom	1 188	43 975	37

MAP 9 : PERCENTAGE ADULTS BETWEEN 15 AND 64 YEARS WITH STANDARD 6 OR HIGHER EDUCATION

Source : CSS 1991

HSRC
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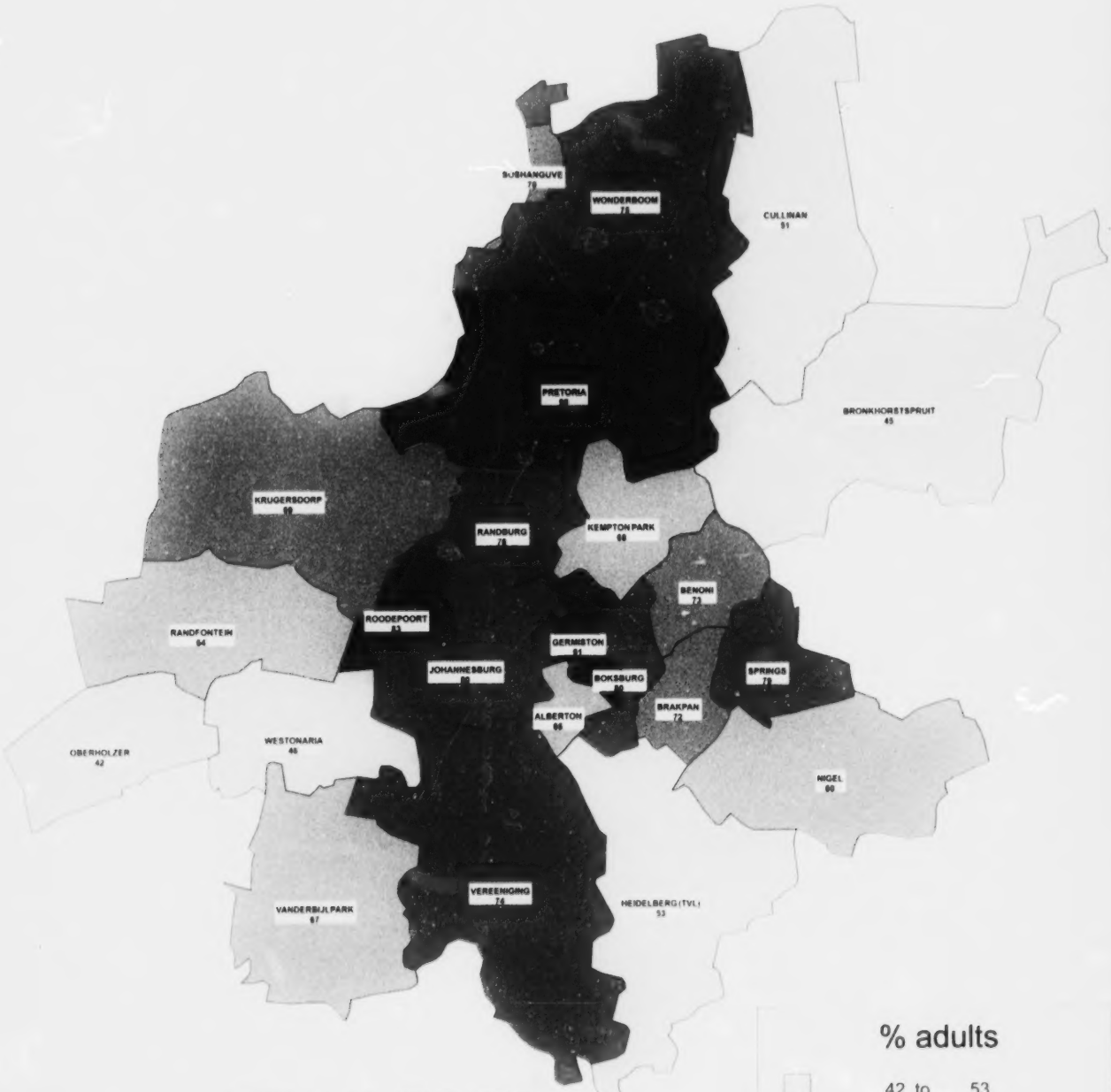

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Table 9 Percentage adults between 15 and 64 years with Standard 6 or higher education

DISTRICT	TOTAL ADULTS (15 - 64 YRS)	ADULTS (15 - 64 YRS) WITH SECONDARY ED.	ADULTS (15 - 64 YRS) WITH TERTIARY ED.	% ADULTS (15 - 64 YRS) WITH STD 6 OR HIGHER ED.
Alberton	261 228	162 376	11 026	66
Benoni	199 935	131 390	15 008	73
Boksburg	139 310	98 392	12 389	80
Brakpan	88 031	59 192	4 256	72
Bronkhorstspruit	25 063	9 689	1 571	45
Cullinan	23 897	10 835	1 426	51
Germiston	129012	98 457	18 928	91
Heidelberg (GP)	49 622	24 151	1 989	53
Johannesburg	1 102 470	786 089	98 416	80
Kempton Park	258 715	159 165	17 205	68
Krugersdorp	139 652	86 138	9 642	69
Nigel	59 746	33 615	2 484	60
Oberholzer	148 900	59 935	3 042	42
Pretoria	493 062	341 100	103 920	90
Randburg	254 650	152 702	46 334	78
Randfontein	81 163	47 775	3 887	64
Roodepoort	162 406	113 464	21 241	83
Soshanguve	92 039	61 770	2 805	70
Springs	110 383	79 323	8 193	79
Vanderbijlpark	286 479	178 260	13 331	67
Vereeniging	166 661	112 160	11 780	74
Westonaria	125 338	54 079	3 433	46
Wonderboom	185 451	121 006	17 404	75

7.1.2 Pre-school education

This discussion is broken down into the following sections:

- Introduction; current concerns; first six years; survival rates, failure and dropout rates in the junior primary phases; goals and objectives of pre-school educare; developmental approach; and financing.
- Pre-school children and guidelines for strategies.
- Pre-school education.
- Child development facilities in Gauteng province.

Introduction

"The shortage of affordable quality early childhood development services in South Africa is an issue that can no longer be ignored. Children, families, communities and the country all pay a price for the continued neglect of young children's development during the early years. It is clear that, in the long run, the consequences of a poorly run and underdeveloped early childhood provision system will manifest itself in educational underachievement, early school leaving and dropout, increased costs in the prevention of crimes committed by young people, and high rates of illiteracy and unemployment in adulthood" (Atmore, 1996:1). The facts are well known.

- South Africa has a low overall early childhood services provision rate and where services are provided certain sections of the population are adequately catered for while other sections are not.
- The quality of early childhood services is also extremely poor in many cases, not because of lack of interest but because of a total lack of resources and infrastructure.
- There are more than one million children in the age range 6-12 who are not attending school.
- Some 25% of all black (African, Indian and coloured) children who start Sub A fail to complete the first year successfully.

In the light of these facts, many parents are forced to make arrangements for their children that are less than satisfactory. The most detrimental situation for young children is where parents leave their children alone at home while they go to work.

Single parents and poor families are in the worst position. However much they wish for quality and affordable services, these are not available.

The children of unemployed parents need access to early childhood development services too, but because of a lack of availability and/or because of financial circumstances they are not able to obtain such services.

Young children must have the best quality care and education during this critical period. Working parents who leave their children in the care of others have the right to expect that their children will be safe and secure and will be given a good educational foundation.

Correcting past imbalances

Atmore also points out that the majority of South Africa's children have not had the benefit of exposure to a good quality early childhood development (ECB) programme. At present only between 9 and 11% of children (birth to 6 years) have access to any ECD services.

"Amongst these, African children are most severely disadvantaged as a result of the discriminatory provision of ECD services by previously appointed governments. At present only 6% of African children from birth to 6 years of age have access to ECD services. This situation has to be drastically redressed and a more equitable scenario of access to ECD services will be established" (Interim Policy, 1995:11).

Particular attention will be given to African children, girls in rural areas and to children of working and rural mothers.

The need to provide equal opportunities

"The transformation regarding the provisioning of ECD services has created high expectations amongst the communities. Children from privileged backgrounds enter the schooling system at a greater advantage than children from impoverished homes. Due to the discrepancies between the home and the school and negative schooling experiences, the vast majority of children in schools within impoverished neighbourhoods that provide a poor learning environment are disadvantaged. There is, therefore, a need to provide equal opportunities and access for all children" (Interim Policy, 1995:12).

Current concerns

Services in South Africa have a number of strengths on which to build:

- The community-based approach
- The existing non-formal training and support infrastructure
- Low cost and affordable provision models and options
- Policy initiatives relating to early childhood development

Despite these factors there is one overriding area of concern, namely the shortage of high quality programmes at a price that parents can afford. The lack of acceptable and affordable childcare is one of the main reasons why women with young children who would like to take up paid employment do not do so (Atmore, 1996:1).

Pre-school children

Pre-school children from birth to six years of age are particularly vulnerable. There are approximately 9 947 000 children up to the age of nine years who are in need of early childhood development services.

"Children under the age of six are particularly vulnerable and in need of such services. They constitute 13% of the total South African population. Two-thirds live in rural areas. African children make up 83%, coloured children 7,3%, white children 7,6%

and Indian children 1,9% of the total number of children in this age group. About 60% of children of pre-school age live in impoverished circumstances. Of these, 90% are Africans who live in poorly resourced rural areas" (White Paper for Social Welfare).

Children from disadvantaged families are in particular need of early childhood development services. At present only approximately one in ten pre-school children are in early childhood development programmes. There is a lack of services for the age group from birth to three years old and for disabled children.

There is no acceptable set of minimum standards for the provision of services to pre-school children. Some programmes are inadequately resourced, thus quality of care is consequently impoverished (White Paper for Social Welfare).

The first six years

"The first six years of life are of vital importance in the development of the young child. During these years the foundation is laid for the child's development. It is a period of the most intense physical and intellectual development. Development is also more rapid than during any other period of life and deprivation has lasting effects. Recognition of the importance of these early years and the benefits of access to programmes coupled with changes in the patterns of employment of women have resulted in the development of early childhood programmes and facilities throughout the world (Atmore, 1996:2).

"Early childhood development is an umbrella term used for the processes by which children grow from birth and develop physically, mentally, emotionally and socially. A variety of programmes provide opportunities for young children to develop fully and are aimed at giving the young child the best possible preparation for the future.

"The foundation of a child's ability to learn and succeed in life is laid during this phase. It is the result of appropriate care that addresses the mental, physical, social and emotional needs of the child. Interventions that provide such care and help strengthen the contexts in which children live, including strengthening the family, the community, and the physical, social and economic environment are necessary for children living in difficult circumstances.

"Investment in early childhood development has been shown to modify inequalities rooted in poverty and social discrimination by giving children from disadvantaged backgrounds a fair start in school and life. Effective early childhood development programmes can bring about cost savings in areas other than education. Health care costs can be cut through preventive measures found in programmes that help reduce disease and accidents. The social costs of delinquency, adolescent pregnancy and related problems are cut as children stay in school longer; and absenteeism is reduced when parents, assured of proper care of their children, can devote time to their jobs. The links between community development and early childhood development programmes through the empowerment and skills acquisition of parents and community members are well known. In early childhood, children are responsive to learning the values of mutual respect and tolerance essential for a democratic society and it is the best place to begin to develop a culture of learning" (Atmore, 1996:2).

Pre-school education

Educare facilities serve different functions in Gauteng province. "In reasonably well-off suburbs pre-primary schools have a mainly educational function, broadening the social experience of children from nuclear families and providing educational experiences which make the transition to primary school easier. In less affluent urban and peri-urban areas, educare facilities serve primarily as day-care centres for the children of working mothers, and vary considerably in the quality of the care from conscientious and high-quality care to the frankly exploitative.

"In rural areas the needs are different again. Day-care diminishes in importance where families are extended, but the creches provide a base for the distribution of food supplements, and for development experience for both children and adults. Through large rural educare networks such as those organised by TREE (Training and Resources in Early Education), children and their parents are introduced to educational ideas. Adult activities often include the generation of funds to support and extend the creche facilities, and these activities may lead into joint ventures for the acquisition of new skills such as literacy classes and basic bookkeeping" (Kvalsvig, 1995:57).

Survival rates, failure and dropout rates in the junior primary phases

"The educational implications of the context in which the black child develops are largely negative. Owing to inadequate nutrition and health care the child's physical condition is often poor, thus limiting energy and vitality. The child also lacks the experiences necessary for optimal cognitive development. Language development in turn is negatively affected. The result is a child who is not school ready and is therefore unable to keep up with the pace at school. This leads to school failure and early dropout.

"While there are disturbing data illustrating the plight of African children in South Africa, the educational implications of this context are most explicitly manifested in the high failure and dropout rates for black primary school children and the number of children who leave school without gaining functional literacy (Atmore, 1996:3).

A number of factors contribute to the high failure and dropout rates. Lategan (1990:3) writes that "Some of these factors relate to conditions internal to the education system (such as access to schools, teacher:pupil ratios, teacher qualifications, etc.) and some to socio-economic conditions external to the education system (such as the education and income levels of their families)."

The provision of pre-school educare services before school entry, among other strategies, is advocated as a means of combating primary school dropout and failure.

Goals and objectives of pre-school educare

The general goal of pre-school educare is defined as being "to enrich the lives of individual children whose development would otherwise be adversely affected by detrimental socio-economic and cultural circumstances, and to show parents and

communities know, besides giving love and devotion, they can best help their children to be successful in school and, ultimately, in their adult lives. As an ideal, community-based early childhood education programmes offer the hope that ignorance, poverty and disease can be reduced and the promise that even the most disadvantaged child can be helped to lead a fulfilling and worthwhile life. Thus, early childhood education, especially in developing countries, is much more than an end in itself. It is also a means for social development and improvement" (Atmore, 1996:4).

The objectives of pre-school educare lie in the growth and development of children in four main areas: the cognitive, social, emotional and physical.

A developmental approach to early childhood development services in South Africa

"Local and international evidence shows that individual children, families and society can benefit greatly from well-planned, integrated community services directed at the developmental needs of young children, especially those in greatest need. Through ECD programmes children are able to receive better nutrition, love and care, mental and social stimulation, moral guidance and constructive socialisation, both in and out of the home. Thus individual children's physical, mental, moral and social development and happiness can be enhanced, with significant benefits for both child and family. ECD services can enable parents to learn about and respond to their children's developmental needs, and/or can free parents, especially mothers, to take up work or further education. An adequate ECD infrastructure enables women in poor families to break out of the cycle of illiteracy, too many children and economic dependence" (Atmore, 1996:8).

These direct benefits to children and families bring many indirect gains to the community and the wider society, including healthier and safer neighbourhoods, increased economic activity and productivity, a reduced need for costly remedial health, education, welfare and police services, lower birth rates, less child abuse and more efficient progress through the school system.

As such, early childhood development programmes have an important role to play in community development and in improving the quality of life for young disadvantaged children and their families who are at risk.

"In the development approach the care, education and social development of young children is integrated with health, housing, welfare, schooling, and economic development. Early childhood development is seen within the context of community development and recognises the important roles played by parents and community members in the care and education of young children. Advantages put forward are that the developmental approach favours continuity and sustainability in programmes, children's needs can be met in an integrated way, and whole communities benefit, not just children, through gaining knowledge and skills and the possibility of jobs. Women gain the opportunity to become involved in community affairs and to develop the organisational capacity to solve other community problems" (Atmore, 1996:8).

Access to early childhood development programmes

Overall access to ECD services is very limited with just over one in ten children having access to services of any kind. Such access as there is, is in inverse proportion to need: white children have significantly greater access to services than black children, children in poverty-stricken rural areas have fewer ECD services than children in urban areas, children on farms being worst off; middle-class children benefit from more highly subsidised pre-primary education programmes, while working-class children often attend full-day centres that do not have the funds to provide an adequate service. Educare programmes are focused on the 3-6 age group and there is a general neglect of under-threes who are in a particularly vulnerable period of life. Children with disabilities do not qualify for educare programmes (Atmore, 1996).

Financing early childhood development

"The lack of financial resources in the field and an unwillingness by the previous government to take responsibility for ECD services are the major causes for the very limited overall access. Poor resource allocation to ECD services is evident in all sectors including government, corporate, social investment, foundations, development agencies and foreign aid, the result being provision for fewer than 11% of children. Where funding has been available it has been from the state, parents, the corporate sector, philanthropic organisations and foreign aid" (Atmore, 1996:17).

A policy on the funding of ECD services

"The public funding of a national ECD programme is justified on many grounds. It can help redress past discrimination against young children, protect the rights of children and women, promote human resource development, help prevent costly social pathologies, secure more efficient performance by children in school and improve the effectiveness and efficiency of the schooling system. Public funding for ECD must be mobilised from national, provincial and local government revenues" (Atmore, 1996:18).

However, public funding should not be the only source of financial support for ECD. Employers also have a distinct responsibility to contribute to meeting their employees' childcare needs.

Parents have played a substantial role in the funding of ECD services through the payment of user fees and should continue to contribute according to their means.

According to Atmore (1996) a policy on the funding of ECD services will include

- recognition that the funding of ECD services involves a partnership of the national, provincial and local governments, the private sector, organised labour, community organisations, parents and donor agencies;
- an enabling legislative environment to encourage the maximum mobilisation of financial resources for ECD provision;
- investments in ECD within the framework of a co-ordinated strategy for reconstruction and development;

- fostering of a funding culture that supports democratisation, transparency and responsible administration and accountability to enable the most efficient use of resources;
- adequate resourcing of an appropriate national ECD programme which will continue to present creative challenges to our capacity to mobilise adequate financial and personnel.

There will, therefore, be the need for creative investigation of special measures and mechanisms to address the funding needs of ECD appropriately and to increase the existing pool of resources available for ECD programming (Atmore, 1996).

Guidelines for strategies

The following guidelines are set out in the White Paper for Social Welfare:

Pre-school and school-going children

- Children from birth to nine years of age have special needs, which will be met to foster their physical, mental, emotional, moral and social development.

- A national early childhood development strategy will be devised as part of an intersectoral programme in collaboration with other government departments, civil society and the private sector. A combination of public and private financing options will be harnessed. At national and provincial levels, intersectoral committees will be initiated to co-ordinate and implement such a strategy.

- The Department of Welfare will ensure that conditions are created for the optimum development of all children and their families through the rendering of appropriate early childhood development services. These services are preventative in nature and constitute a social investment in a healthy and able nation.

- Disadvantaged children under five years of age will be the primary target for early childhood development services as they are the least served at present and the most vulnerable group. The needs of children in the age group birth to three years old and of disabled children will also be addressed urgently.

- "No single model or programme is appropriate to meet the varied early childhood development needs of families, and a range of options will be made available, such as home and centre-based services; after-care for school-going children; stimulation programmes including part-day programmes; and family, education, health and nutrition programmes. Early childhood development facilities are particularly well placed to house supplementary feeding programmes, which are more effective when combined with nutritional education" (White Paper for Social Welfare).

- "Services and training programmes offered by existing role players - Government, local authorities, non-governmental organisations (NGO's), community-based organisations (CBO's) and parents - will be reinforced. Through community development interventions, early childhood development services will be initiated in underserviced areas" (White Paper for Social Welfare).

- Training will be developed for all those engaged in early childhood development service delivery and all care givers, parents and social service professionals. Use will be made of formal and non-formal training services, and all training will be integrated into the National Qualifications Framework for accreditation by the South African Qualifications Authority (SAQA).

- Early childhood development programmes will be registered, and appropriate national standards developed, which will be flexible enough to apply to a wide range of circumstances.

- After-school child development programmes for school-going children will be promoted.

Child development facilities in Gauteng

A spatial overview of the Gauteng province indicates that most of the southern peripheral parts of this province are underserviced and that only Brakpan and Krugersdorp have adequate educare provision. According to the map and table, early childhood development services are lacking in the following cluster of districts that fall in the lower ranges of provision: Vanderbijlpark; Alberton; Heidelberg; Vereeniging; Randfontein; Oberholzer; Westonaria and Springs. Wonderboom on the northern peripheral is the only district in the north that is underserviced. These areas are thus high priority areas. Districts falling in the middle three ranges form a band stretching in an east-west direction. These districts are also in need of educare provision.

Brakpan is the best serviced area with 18,09%. Despite its high population density (577 people per km²), nearly half the population is economically active, resulting in efficient educare service provision. Krugersdorp is the second best serviced area with 16,63%.

Vanderbijlpark is the worst serviced area with 0,89%. Vanderbijlpark is a white, urbanised area (470 people per km²) involved in manufacturing. However, less than half the population is economically active and there is a high unemployment and dependency ratio.

Brakpan and Krugersdorp will benefit in several ways from its better structured educare network, including the existence of continuous and sustainable programmes, an integrated approach to children's needs that benefits not only children, but the entire community, and the gaining of knowledge and skills improving the likelihood of employment. Furthermore, women will be able to grasp the opportunity to become involved in community affairs and to develop the organisational capacity to solve other community problems.

On the other hand, the remaining districts face a bleak future. Problems include unhygienic and unsafe neighbourhoods, decreased economic activity and productivity, and increased need for costly remedial health, education, welfare and police services, higher birth rates, more frequent child abuse and less efficient progress through the school system.

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MAP 10 : PERCENTAGE OF CHILDREN IN EDUCARE INSTITUTIONS

Source : National Educare Forum

HSRC
RGN
GIS UNIT

% children

	1 to 2
	2 to 5
	5 to 9
	9 to 10
	10 to 18

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Table 10 Percentage children younger than 6 years in educare or pre-primary school

DISTRICT	EDUCARE CENTRES	CHILDREN (0-5) AT CENTRES	TOTAL AGED 0 - 5	% TOTAL CHILDREN AT CENTRES
Alberton	212	746	44 600	1,7
Benoni	48	2 866	33 100	8,7
Boksburg		regional average	22 200	10,0
Brakpan	19	2 840	15 700	18,1
Bronkhorstspruit	347	regional average	4 900	9,0
Cullinan	5	269	3 200	8,4
Germiston	10	1 152	12 600	9,1
Heidelberg (GP)	2	194	10 300	1,9
Johannesburg	439	8 393	166 000	5,1
Kempton Park	84	3 812	39 900	9,6
Krugersdorp	42	3 325	20 000	16,6
Nigel	17	1 166	11 900	9,8
Oberholzer	3	409	12 600	3,3
Pretoria	119	6 858	56 500	12,1
Randburg		regional average	31 800	10,0
Randfontein	16	318	12 300	2,6
Roodepoort		regional average	20 400	10,0
Soshanguve	103	regional average	20 400	9,0
Springs	28	264	15 200	1,7
Vanderbijlpark	11	481	53 900	0,9
Vereeniging	11	571	30 200	1,9
Westonaria	21	609	16 500	3,7
Wonderboom	12	658	28 300	2,3

7.2 Health

Introduction

The sections dealing with problems and challenges, restructuring, policy framework, principles, and district health system are abridged from the policy document "Restructuring the National Health System for Universal Primary Health Care, 1996".

"Health care delivery in South Africa faces a number of acute problems and challenges, many of which are related to the utilisation and distribution of financial and other resources. Approximately R30 billion was spent on health care in South Africa in 1992/93. This is equivalent to 8,5 % of gross domestic product (GDP), or one-twelfth of the economy. South Africa is thus devoting substantially more resources to the health sector than most developing countries, yet has poor health status relative to these countries" (Restructuring the National Health System for Universal Primary Health Care, 1996:1).

Problems and challenges confronting the public health sector

One of the most pressing problems facing public health services is the relatively heavy concentration of resources in the hospital sector, and consequent under-resourcing of primary health care services. "Approximately 76% of total public sector health care expenditure was attributable to acute hospitals in 1992/93, with academic and other tertiary hospitals alone accounting for 44%. In contrast, 11% was spent on non-hospital primary care services. While certain hospitals provide quite substantial primary care services (e.g. deliveries, and ambulatory care at community hospital outpatient departments), it is clear that a redistribution of resources between levels of care is required if the government is to significantly improve access to community-based primary care services for those who currently do not have such access" (Restructuring the National Health System for Universal Primary Health Care, 1996:2).

The effectiveness of public sector health services is also undermined by the historical geographic maldistribution of resources that are the legacy of the apartheid health care system. An explicit process of resource reallocation between the nine provinces has been implemented with effect from the 1995/96 financial year. "The stated goal is to achieve per capita equity in provincial health care allocations, with an allowance for provinces with academic complexes, within 5 years. While attention is usually focused on the distribution of resources between provinces, recent highlighted significant intraprovincial disparities in public sector resource allocation. Data has these indicate that the public sector in the richest magisterial districts employs 4,5 times more general doctors, 2,4 times more registered nurses, and 6,1 times more health inspectors than in the poorest districts, and that average public expenditure per person on health services in the richest districts is 3,6 times more than in the poorest districts" (Restructuring the National Health System for Universal Primary Health Care, 1996:3).

The inequitable and inefficient distribution of public sector health care resources described here has contributed to inadequate public health sector performance over

the last several decades. This is manifest in extremely poor health indicators, including high rates of avoidable morbidity, disability and mortality among the poor and disadvantaged communities, particularly in rural or urban underserved areas. These problems will be significantly addressed through improvements in quality and accessibility of the public primary health care delivery system.

In summary, the public sector faces the challenge of attempting to improve access to basic primary care services for those who currently do not have access to such care. At the same time it is also trying to redress historical inequities in the distribution of health care resources between and within provinces. This must be achieved within the constraints of a limited budget that is currently derived mainly from general tax revenues (Restructuring the National Health System for Universal Primary Health Care, 1996:3).

"Over the past decade, expenditure in the private sector, particularly that by medical schemes, has increased more rapidly than the rate of inflation, with expenditure on medicines and private hospitals increasing rapidly during this period. The rise in expenditure on benefits is due to increases in both unit costs and utilisation levels. Several factors have driven these increases, including the fee-for-service reimbursement of providers, the fact that some doctors have a stake in the financial performance of hospitals through share ownership, as well as the fact that many health service providers (including hospitals and medical practitioners) benefit financially from selling medicines. Cost increases have also been driven by increases in the proportion of scheme members who are elderly. As expected, the level of contributions to medical schemes has also risen rapidly, since schemes must finance the benefit payments out of contributions" (Restructuring the National Health System for Universal Primary Health Care, 1996:3).

"Recent changes to the legislation governing medical schemes, (the Medical Schemes Amendment Act of 1993) have improved the capacity of schemes to manage their costs to some extent. However, previous changes to the legislation (specifically, the 1989 amendments to Act), have created a situation in which the cross-subsidisation of elderly members by younger, healthier members is undermined, in that medical schemes are now permitted to charge high risk members higher contributions, based on their previous medical claims or on pre-existing conditions. Certain schemes are thus becoming increasingly unaffordable for the elderly and chronically ill who will rely more heavily on public sector health services.

"The rapid cost spiral and fragmentation of risk pools within medical schemes is of concern to a number of health sector stakeholders. Medical scheme membership is becoming increasingly unaffordable for many South Africans, and especially those with low incomes, the elderly and those with chronic illnesses. In the absence of a substantial cost-containment effort, scheme membership may begin to decline significantly, and expansion of the medical scheme market to low income earners is unlikely to occur. This will have negative consequences for the public health sector, through increasing numbers of medical scheme members becoming dependent on

public sector services for their health care. It is recognised that recent trends towards the emergence of managed care arrangements may go some way towards alleviating cost pressures in the private health insurance market. However, additional regulatory measures are considered essential in order to address the full range of inefficiencies now pertaining in that market" (Restructuring the National Health System for Universal Primary Health Care, 1996:4).

Need for restructuring of the National Health System

The serious problems in both the public and private sectors, and in the interface between them, will become increasingly serious as the burden on the health services increases over time due to the rapidly expanding HIV/AIDS epidemic, and to the ageing of the population and other epidemiological shifts inherent in the epidemiological transition being experienced by the country.

Addressing these problems effectively will require a significant level of restructuring of both sectors and of their interactions. Some elements of this restructuring can be undertaken in the short term, while other elements will require at least five to ten years to implement. Particular priorities in this restructuring process include the following:

- Efforts to restrict the growth of health sector expenditure in South Africa by focusing on the more efficient and effective use of existing resources
- Improving the access of South Africans to health services, as well as the quality of services, particularly at the primary care level and in geographic areas that are currently underresourced
- Promoting the redistribution of resources between levels of care within the public sector
- Achieving a redistribution of resources currently used only in the private sector to make them accessible to a broader section of the population
- Promoting cost-containment efforts within the private sector (Restructuring the National Health System for Universal Primary Health Care, 1996).

Policy framework for the National Health System

This policy document contains a set of policies that will involve a comprehensive restructuring of health care in South Africa, aimed at the development of a comprehensive, efficient and equitable National Health System. More specifically the policies set out here aim to achieve

- substantial, visible and sustainable improvements to the accessibility, efficiency and effectiveness of a publicly funded primary health care (PHC) service;
- improvements in the funding, efficiency and governance of the public hospital system; and
- improvements in the equity and efficiency of the private health sector, and in the interaction between the public and private health care systems (Restructuring the National Health System for Universal Primary Health Care 1996).

Principles of the PHC delivery system

- The National Health System should ensure universal access (the ease with which health services may be accessed geographically, financially, and socially).
- The National Health System should build on and strengthen the existing public sector PHC and hospital system.
- The National Health System should be congruent with, and should strengthen the emerging district-based health care system.
- The National Health System should be based on a comprehensive primary health care approach, and should use population-based planning and delivery mechanisms.
- The PHC delivery system should be fully integrated with, and consistent with, other levels of the National Health System.
- The National Health System should optimise the public-private mix in health care provision, and should ensure the achievement of the redistribution of resources between the private and public sectors.
- The National Health System should preserve the choice of individuals to use private providers and to insure themselves for doing so.
- The National Health System should emphasise the needs and rights of users of the system, and should empower users and their communities to participate in governance of the health care system.
- The National Health System should be outcome driven, and should place substantial emphasis on quality of patient care, on health outcomes, and on the "caring" aspects of health care services.
- The organisation and functioning of the National Health System should be based on the principle of decentralised management. It will aim to create the maximum possible management autonomy at health facility level within the framework of national public service guidelines (Restructuring the National Health System for Universal Primary Health Care, 1996).

The district health system

"The South African Government of National Unity, through its adoption of the Reconstruction and Development Programme (RDP) in 1994, committed itself to the development of a District Health System based on the Primary Health Care Approach as enunciated at Alma Ata in 1978. This approach is the philosophy behind which many health systems around the world have been reformed, and out of which has developed the concept of the District Health System. District-based health services are now applied successfully in many countries, and have been adapted to a wide variety of situations, from developing countries on our own continent, to more sophisticated systems such as that of Canada" (Restructuring the National Health System for Universal Primary Health Care,1996).

A national health system based on this approach is as concerned with keeping people healthy as it is with caring for them when they become unwell. These concepts of "caring" and "wellness" are promoted most effectively and efficiently by creating small management units of the health system, adapted to cater for local needs. These units provide the framework for our district-based health system, so

that a district health authority can take responsibility for the health of the population in its area (Restructuring the National Health System for Universal Primary Health Care,1996).

Primary health care (PHC) services are at present provided in a fragmented and inefficient manner. Co-ordination between the public and private sectors is minimal, and within the public sector there has been a multitude of different (and overlapping) authorities responsible for health services. Salaries, and terms and conditions of service vary greatly between different local authorities, and between local authorities and the provincial and national administrations.

Restructuring district level health services will be a complex process, but failure to do so will perpetuate inefficiency and inequity. An integrated health system is built on the provision of health and health care services at the community level. Central to the PHC approach is full community participation in the planning, provision, control and monitoring of services.

Comprehensive PHC activities encompass all that is required to make a difference to people's lives: to make them healthy, and to advocate for the conditions that will keep them healthy. This is the "wellness" approach to health systems. It recognises that our health is determined by factors that go beyond the traditional definition of health and health care. There are social and other determinants such as housing, water, sanitation, education, employment, income, the environment, and individual lifestyle that all play major roles in determining our health. This means that a health service based on wellness should, *inter alia,*

- be structured so that appropriate emphasis is placed on prevention, health education and promotion, early intervention, and rehabilitation;
- be responsive to community needs by placing control and management responsibilities at a local level;
- eliminate inequities and establish intersectoral development links;
- integrate institutional, community-based and preventive programmes both within the health sector and with other sectors impacting on health;
- reduce waste and eliminate duplication at all levels (Restructuring the National Health System for Universal Primary Health Care,1996).

The system must be structured so that no one in need is prevented from accessing any of the levels of care that they may require, rapidly and efficiently, and so that all will receive the highest quality of care at all levels.

The district level is the level at which co-ordination of all district health services takes place, and is the unit of management of the health system that is best able to drive it. "The district must be large enough to be economically efficient, but small enough to ensure effective management which is accountable to local communities and is responsive to local needs through the participation of communities and of staff in the planning and management of services" (Restructuring the National Health System for Universal Primary Health Care,1996).

7.2.1 Average population per hospital bed

Hospital beds are not equitably distributed in the Gauteng province. When one analyses the number of beds per 1 000 people, one of the indicators of the availability of health or hospital services, the following picture emerges: The provision of beds is inequitably skewed in favour of the West Rand (11) and Pretoria health regions (5,1). Central Wits (3) is in the middle range. The lowest level of provision is in the south and south-east regions of Vaal (2) and East Rand (1,8).

East Rand has a population of 1 950 285, which is the second highest after Central Wits at 2 263 415. Given the fact that large areas at the East Rand are rural, the low level of beds per 1 000 people serving a high population means that large numbers of people will have difficulty accessing this service. In contrast the West Rand covers a smaller area and has a far lower population, but has the highest level of provision.

"One of the measures of efficiency of hospitals is the bed occupancy rate which is the proportion of beds occupied over a year. This is usually expressed as a percentage and the optimum level is considered to be 70 to 80%. Occupancy rates below 50% indicate underutilisation and rates over 100% indicate overcrowding" *(Health Systems Trust, 1996a:55)*. Central Wits, East Rand and West Rand all fall within the optimal range of 70 to 80%. Pretoria is slightly suboptimal at 63,5%. Vaal at 59% shows that beds are not being optimally utilised. Johannesburg, Diepkloof, Koos Beukes and Boksburg-Benoni Hospitals are regularly experience overcrowding.

Guidelines for locating PHC facilities in Gauteng

In the interests of equity, nationally accepted guidelines should be used to decide when it is justifiable to provide a community with a new or upgraded facility and to prioritise new projects. These guidelines should be affordable within a national context. The present PHC facility guidelines developed before the current restructuring are very limited in their content and application. Preliminary guidelines for hospitals have also been proposed. These guidelines focus on bed:population ratios of 2, 1, 0,3 and 0,4 beds per 1 000 people for district, regional, tertiary and chronic hospitals respectively, as well as for the organisational layout of district hospitals (Health Systems Trust, 1996b).

According to the guidelines, for Alberton, a dense metropolitan district (3 375 people per km²), a mobile clinic must serve 5 000 people per visiting point at a radius of 0,33 km for each visiting point; a medium-sized clinic or health centre for a catchment population of 80 000 must serve a maximum catchment radius of 1,4 km; and a major 24-hour health centre with a catchment population of 80 000 for general care, and 180 000 for specialised and 24-hour services must cater for a catchment radius of 1,4 km and 2 km respectively.

Large urban districts like Germiston (1 052 people per km²) and Soshanguve (2 252 people per km²) must have a catchment population of 3 000 - 6 000 per visting point at a 1 km radius for a mobile clinic; 50 000 people at a radius of 2,8-4 km for a medium-sized clinic or health centre; and 50 000 for general care, and 180 000 for specialised and 24-hour services at a radius of 2,8-4 km as well as 5,4-7,6 km radius for a major 24-hour health centre. Soshanguve's high population density on its

periphery can be attributed to the location of Medunsa University.

Small urban districts like Wonderboom (197 people per km²), Vanderbijlpark (470 people per km²), and Krugersdorp (147 people per km²) must meet the following guidelines: for a mobile clinic, 600 - 5 000 people per visiting point at a 1-2 km radius; for a medium-sized clinic or health centre 10 000 - 20 000 people at a 4 km radius; and for a major 24 hour health centre 100 000 - 180 000 people at a radius of 9,9 – 15,9 km.

Rural districts like Heidelberg (66 people per km²) and Cullinan (26 people per km²) must meet the following requirements: for a mobile clinic, 250 - 2 000 people per visiting point at a 4 km radius. Data and the guidelines for medium-sized clinics or health centres and major 24-hour health centres for rural districts were not available.

Transformation of health care in Gauteng

A Gauteng Department of Health plan to streamline and equitably distribute services throughout the provinces is being debated. The aim of the plan is to "improve the quality of service and achieve budget cuts" (HST Update, No. 21:13). The plan aims to reduce overspending in 1998 to R242 million and to balance budget allocations and expenditure by 2001.

The implementation of this plan would involve retrenching 118 doctors and 2 300 cleaners and redeploying 6 000 health workers. Three hospitals would be closed and seven would be downgraded to health centres. "Some regional and township hospitals will be strengthened, while hospitals that are underutilised and duplicate services will be closed" (HST Update, No. 21:13). The plan has been opposed by unions and academics who suggest a range of other options. According to Dr. Max Price the Dean of Wits Medical School, hospitals could be allowed to raise and retain their own revenue from the private sector and paying medical aid patients. Alex van den Heever of the Wits Centre for Health Policy maintains that because health services are not a national priority such as education and welfare entitlement, health is most likely to face budget cuts. The health budgets will be determined within provinces and a cut in one province will not be offset by an increase elsewhere. Van den Heever also points out that reducing hospital services should be matched by an increase in other health services in order to ensure that marginalised communities are not further marginalised (Health Systems Trust, 1996c).

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MAP 11 : DISTRIBUTION OF HOSPITAL BEDS

Source : Health Information Systems and NELF

HSRC
RGN
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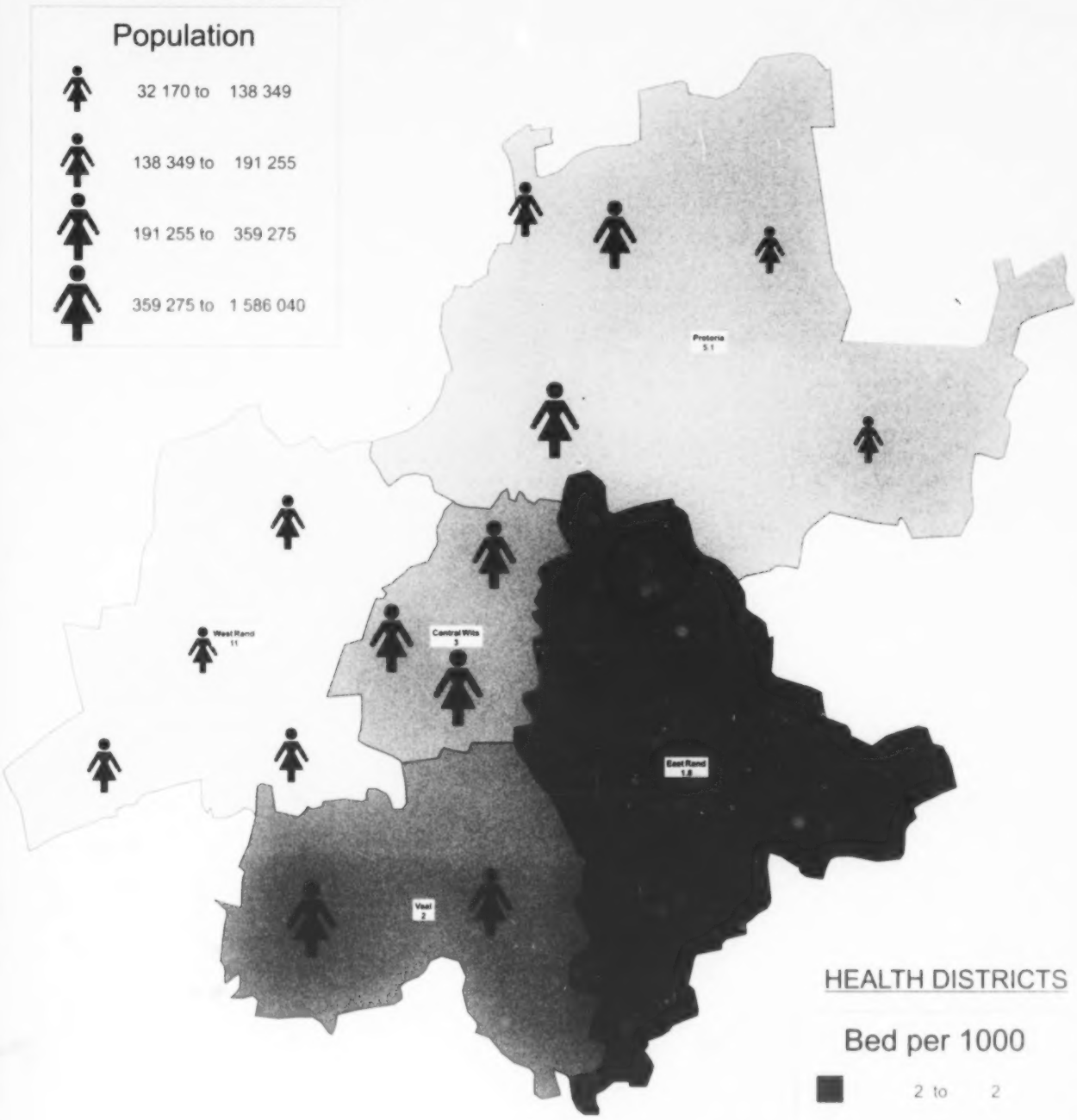

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Table 11 Distribution of hospital beds

DISTRICT	TOTAL POPULATION	TOTAL NO. OF BEDS	POPULATION / BED
Alberton	391 703	149	2 629
Benoni	303 647	554	548
Boksburg	204 176	702	291
Brakpan	138 349	470	294
Bronkhorstspruit	39 517	0	n/a
Cullinan	32 170	363	89
Germiston	173 856	1 966	88
Heidelberg (GP)	108 462	145	748
Johannesburg	1 586 040	9 411	169
Kempton Park	372 504	1 893	197
Krugersdorp	191 255	2 516	76
Nigel	93 296	138	676
Oberholzer	187 693	1 008	186
Pretoria	690 645	7 175	96
Randburg	359 275	732	491
Randfontein	109 336	917	119
Roodepoort	227 968	410	556
Soshanguve	146 319	1 548	95
Springs	158 861	821	193
Vanderbijlpark	444 336	259	1 716
Vereeniging	351 888	1 302	270
Westonaria	184 707	340	543
Wonderboom	275 952	204	1 353

7.3 Housing

"The estimated housing backlog in South Africa is 1,5 million housing units. If the natural population growth is added to the backlog, a total of 3,5 million housing units will have to be provided over the next ten years" (White Paper, 1994:11).

Owing to the extent of unemployment in South Africa and the associated poverty, approximately 80% of those requiring housing earn less than R3 500 a month and therefore depend on government assistance to obtain a home of their own. Approximately 60% of those in need of housing earn less than R1 500 per month and are totally dependent on government assistance (National Dept. of Housing, Website, 1996).

"Government's goal is to increase housing's share of the total state budget to 5%. It also intends to increase housing delivery substantially to 350 000 units a year to reach the Government of National Unity's target of 1 000 000 houses in five years" (Annual Report of the Department of Housing, 1995:6).

Housing and the RDP

Housing lies at the core of the Reconstruction and Development Programme (RDP), and South Africa's housing effort must serve as an engine of the economy and as a major spur to job creation.

The general value framework for housing in South Africa complements the RDP's principles and objectives. All the housing and related principles and objectives of the RDP have been incorporated into the White Paper on Housing, which addresses all policy issues regarding housing.

Primarily the RDP aims at redressing past imbalances and distortions. It addresses socio-economic backlogs at scale by providing basic services and infrastructure (including housing), providing employment and maximising employment creation in the process (Annual Report of the Department of Housing, 1995).

The White Paper

The Housing White Paper has provided the basis for all the department's activities. It is the product of extensive consultation involving government at national and provincial level, non-governmental organisations, community representatives and the private sector.

The policy has seven major thrusts designed to turn South Africa's housing situation around:

- **Housing support for a people-driven process**
  "To help individuals and low-income families with housing, government at all levels, in conjunction with the private sector and civil society, is planning housing support mechanisms throughout the country. The White Paper clearly sets government assistance for the poor as a priority. The poor, however, cannot easily access this assistance entirely on their own. Intervention is necessary to establish a

range of financial, institutional, technical and logistical support mechanisms that will enable communities to continually improve their own housing circumstances. Such mechanisms can be organised in the form of housing centres (an identifiable place or base where beneficiary families could gain access to a serviced site and the relevant subsidy package). Where required, they could receive training in materials manufacture and basic construction skills, together with the necessary information and advice to enable them to contribute directly to the design and construction of their own houses or dwellings" (Annual Report of the Department of Housing, 1995:7).

- **Stabilisation of the housing environment**
  "Many communities were in disarray when democracy dawned in South Africa. A lack of functioning local authorities, since the activities of many had been disrupted by rent, bond, and service charge boycotts, meant that even the hitherto limited stream of private sector investment had dried up. The task now is to stabilise the residential environment. Conditions conducive to investment by the public and private sectors and by individuals in these areas must be created" (Annual Report of the Department of Housing, 1995:8).

- **Consolidation and unification of housing institutions**
  "A rationalised statutory, governmental and parastatal institutional framework within which the national housing strategy will be implemented is a priority of government. Fragmentation, overlapping, wastage and inefficiencies in the institutional housing set-up must be eliminated to establish an institutional basis from which a sound long-term strategy can be launched" (Annual Report of the Department of Housing, 1995:10).

- **Encouragement of savings for housing**
  "Individual savings for housing are recognised internationally as a major route towards mobilising housing resources. A positive savings record of more than nine months qualifies a borrower for a home loan. In 1995, a nine-month savings scheme was introduced for those people who cannot afford deposits for minimum housing loans" (Annual Report of the Department of Housing, 1995:10).

- **A subsidy scheme to provide housing opportunities for millions**
  The Housing Subsidy Scheme aims at mobilising credit and is one of the cornerstones of the government's approach to the housing challenge. Its goal is to assist households that cannot provide their own housing.

- **Mobilisation of credit at scale**
  "Virtually none of the nation's savings is currently being invested in low-income housing. Therefore, the majority of the population is practically excluded from access to housing finance. The National Housing Finance Corporation (NHFC) is to address this problem and its task entails removing impediments and reducing the funding costs to small and medium lenders; limiting and spreading the risk associated with lending to low-income borrowers and providing funds for small retail lenders; reducing interest costs to low-income borrowers; and addressing the regulatory, policy and socio-political constraints on sustained expansion of retail housing credit.

"The NHFC will constitute a long-term intervention aimed at providing structural adjustment within the established financial sector to improve access to finance for those historically denied such access. It will also, however, promote the establishment and growth of innovative alternative retail finance capacity to service market segments in which the more established sector is not yet ready to engage" (Annual Report of the Department of Housing, 1995:13).

- **Making land available for housing**
  "The land delivery process is critical to housing. This includes the identification and allocation of undeveloped land and its transformation into serviced sites for residential development. The fragmented and extremely complex regulatory network within which land is delivered is often inadequate and in conflict with the aims and objectives of the housing strategy and the RDP. Short-term intervention to aid the speedy delivery of land is essential. As a result, the Development Facilitation Act was drafted and promulgated as a short-term measure. This Act makes it possible to lay down nationally uniform norms and standards for land development, offers national legislation in parallel to provincial laws as an alternative, and provides more appropriate mechanisms for transparent, rapid land delivery, an option for provincial administrations, local authorities and the private sector to adopt and utilise. This Act also provides for a Development and Planning Commission to advise the Minister on policy and laws relating to planning, development, land and infrastructure issues" (Annual Report of the Department of Housing, 1995:13).

Obstacles to the housing delivery process in 1995

"The housing sector is coming under fire increasingly for its apparent failure to deliver. Since the first democratic general elections in April 1994, there has been a noticeable slump in housing delivery and this hiatus is causing anxiety and concern. The ongoing policy debate appears to lack decisiveness. Meanwhile, the position among the homeless is deteriorating as people battle for a stake in the dwindling supply of housing opportunities and resources.

"Under the previous dispensation the State's housing functions were fragmented among 17 national and provincial authorities. Without a coherent national housing policy, housing activities were being conducted on an inconsistent and inequitable basis. In the former TBVC states and self-governing territories, authorities paid scant attention to the growing housing needs of their communities, while in the rest of the country the Own Affairs Administrations were extravagant in their allocation of housing subsidies for the benefit of a privileged few. The most the homeless population could hope for was access to a rudimentarily serviced building site without any support in constructing even a basic shelter. Not surprising, therefore, was the size of the housing backlog inherited by the Government of National Unity.

"Government had two options in its approach to the housing problem. It could either follow past practice by entrenching direct State provision as the primary means of housing the poor - a route that has generally been discredited throughout the world, especially in developing countries - or it could, in line with current international wisdom, adopt an enabling approach which, although results were likely to fall far short of expectations in the short term, would nevertheless offer the best chance of

longer-term sustainability. In view of the magnitude of the problem, and the serious limitations on resources, Government was left with little choice but to embark on the onerous exercise of restructuring housing delivery by a process that would draw in all available capacity" (Annual Report of the Department of Housing, 1995:17).

"South Africa is fortunate in having a sophisticated construction industry and an advanced financial sector that have the capacity to meet the effective demand for housing products and services. Nevertheless, the market in which they operate is dysfunctional in that only 15% of households requiring housing are able to meet their needs in the market place without assistance. The remaining 85% depend on State support to a greater or lesser extent. To correct deficiencies in the market, a wide range of interventions to ease the logjam are necessary. These interventions refer to the seven major thrusts designed to improve South Africa's housing situation. Such interventions should be set up coherently and consistently within the framework of a national housing policy and strategy. The national Government's responsibility is therefore to establish a sustainable housing process through interventions that influence the housing market positively" (Annual Report of the Department of Housing, 1995:18).

7.3.1 Distribution of informal housing

The NELF database was used to represent the percentage informal housing per district. Eskom, who developed NELF have been critical of the level of accuracy. Regarding the accuracy of housing data, the issue is whether the sum of formal and informal houses divided by the sum of the housing units would equal one. In Gauteng this value is 0,99, which can also be stated as 1% inaccurate.

The data show that the districts in which shacks predominate and where the most dense urban informal settlements are located are Johannesburg, Kempton Park, Alberton, Germiston and Soshanguve.

The first four districts owe this phenomenon to the availability of job opportunities. The last district, Soshanguve, has had an influx of residents from the Winterveld area of the North-West province. These five should therefore be categorised together.

The West Rand areas of Krugersdorp (14,46%) and Randfontein (17,46%) reflects percentages of informal units in the same category as Johannesburg. However, this cannot be correct as the West Rand has been in economic decline. Other areas with similar problems to the West Rand are Vanderbijlpark (30,25%) and Vereeniging (44,50%).

As shown on the map, there are low concentrations of informal housing in the Pretoria metropolitan area (excluding Soshanguve), an area experiencing economic growth, particularly along the Centurion-Midrand corridor. This is due to the policies of the past government. Other districts with informal settlements are Springs, Nigel, Benoni, Brakpan, Boksburg and Heidelburg. These towns also have formal urban areas (Kwa-Thema, Duduza, Daveyton, Vosloorus) which served as dormitory towns.

No comment is possible on the distribution of informal housing in Oberholzer, Westonaria, Bronkhorstspruit, Cullinan, Wonderboom as these are farming districts

and the number of farm workers is unknown.

The most urgent problems in terms of the upgrading of informal settlements are to be found within the metropolitan areas of Greater Johannesburg, North-East Rand, Greater Pretoria, the Vaal, followed by the East Rand.

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Development Planning, Environment and Works

MAP 12 : PERCENTAGE INFORMAL HOUSING

Source : NELF Database

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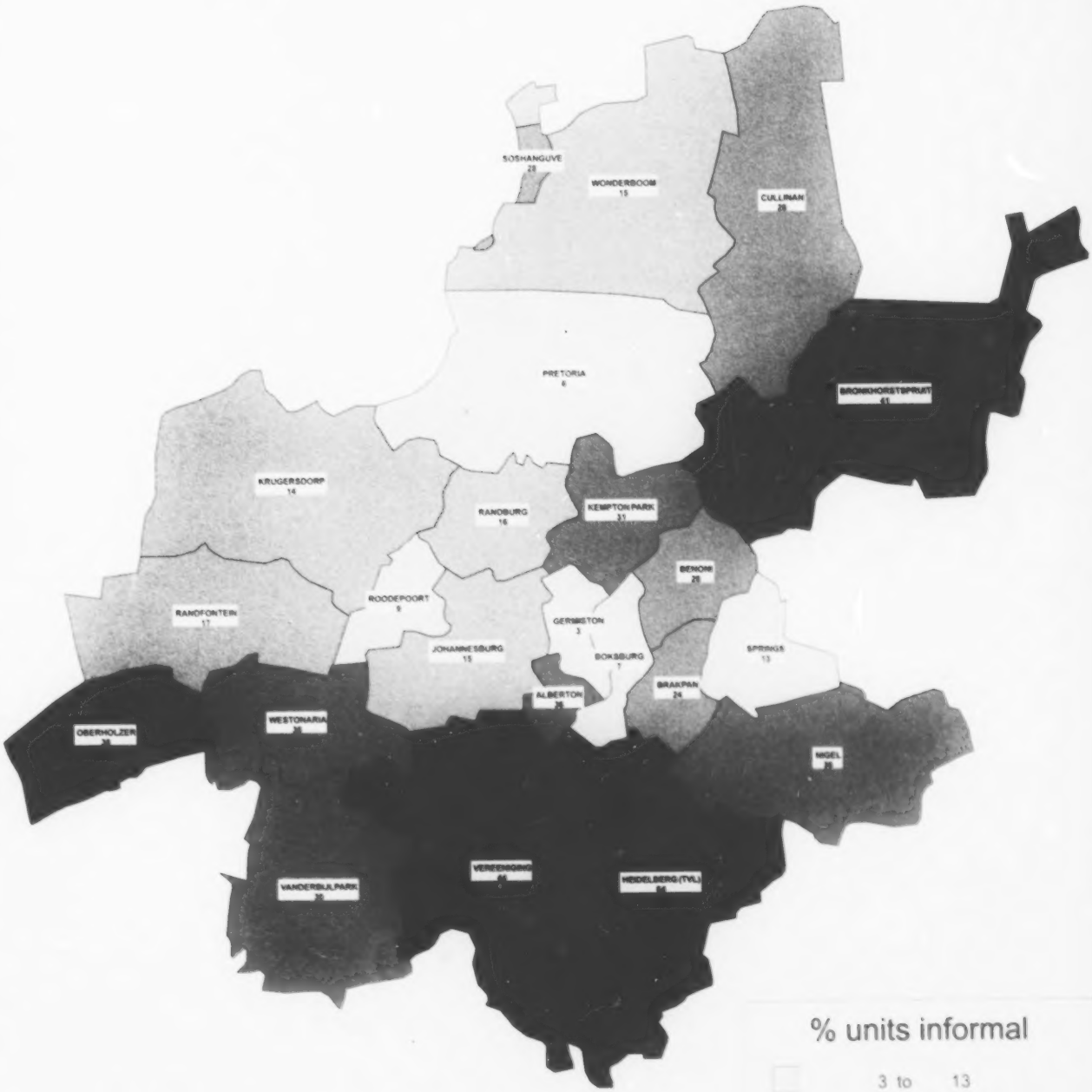

% units informal

3 to	13
13 to	17
17 to	28
28 to	36
36 to	64

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Table 12 Percentage informal housing

DISTRICTS	TOTAL HOUSES	TOTAL INFORMAL HOUSES	% INFORMAL HOUSES
Alberton	100 524	36 065	35,9
Benoni	68 221	19 009	27,9
Boksburg	50 098	3 465	6,9
Brakpan	32 285	7 814	24,2
Bronkhorstspruit	8 725	3 556	40,8
Cullinan	6 861	1 953	28,5
Germiston	49 851	1 488	3,0
Heidelberg (GP)	24 666	15 870	64,3
Johannesburg	389 310	58 670	15,1
Kempton Park	104 831	32 825	31,3
Krugersdorp	45 027	6 512	14,5
Nigel	20 449	7 439	36,4
Oberholzer	35 079	13 326	38,0
Pretoria	207 630	12 829	6,2
Randburg	93 207	14 904	16,0
Randfontein	23 619	4 123	17,5
Roodepoort	59 404	5 169	8,7
Soshanguve	31 055	8 809	28,3
Springs	37 330	4 989	13,4
Vanderbijlpark	95 098	28 770	30,3
Vereeniging	98 879	44 001	44,5
Westonaria	32 435	11 620	35,8
Wonderboom	58 342	8 791	15,1

7.3.2 Retirement facilities

Introduction

The current dispensation on ageing in South Africa does not take demographic realities into account. The white population is significantly older than the rest of the population. "Demographic projections indicate that over the next 20 years the proportion of elderly people in the population will increase. The annual increase of older persons will result in a total of 3,4 million aged persons by 2015. The estimated percentage of persons aged 80 years and over is increasing. Persons older than 80 years of age are particularly vulnerable, especially older women and the historically disadvantaged" (White Paper for Social Welfare, 1996:93).

Cost of care of the elderly

There is an unrealistic emphasis on institutional care for older persons in the white community. The average unit cost of between R11 000 and R22 000 per person per annum for institutional care indicates that the current dispensation is unaffordable. There is also an inappropriate emphasis on the government's responsibility for the care of the aged. There is limited information on services provided by informal service providers. "About 61% of the total national welfare budget is spent on social security and social welfare services for the elderly" (White Paper for Social Welfare, 1996:93). An in-depth evaluation of the present situation regarding ageing has been launched by the Department of Welfare together with all stakeholders.

Lack of retirement provision

"Economic conditions in South Africa are unfavourable, and few job opportunities exist. Large numbers of South Africans are unemployed, work in the informal sector or work in low-wage categories and consequently lack the means to save for their retirement. For those employed in the formal sector, preparation for retirement is inadequate or completely lacking. There are not enough incentives for financial provision for retirement and old age. It is as a result of these factors that elderly persons are vulnerable and are often in need of social support" (White Paper for Social Welfare, 1996:93).

Disparities and inappropriate services

"Racial, urban and rural disparities exist in service provision, particularly (with respect to) old age homes. Old age homes and service centres for the elderly are occupied and used largely by whites. There are backlogs in providing facilities and services for the elderly as well as affordable housing in developing and underdeveloped communities, with an oversupply and under utilisation of other facilities and services in some communities. There is an overemphasis on institutional care and informal care is not fully acknowledged in social programming" (White Paper for Social Welfare, 1996:94).

Social support systems for the care of black older persons have disintegrated in some communities owing to a number of factors such as violence and displacement.

Recreational services for older persons are mostly geographically and financially inaccessible, and are also inadequate in disadvantaged communities. There is a lack of appropriate and affordable accommodation for the elderly. Older people, especially those who are disadvantaged, women and persons over 80 years of age are generally nutritionally vulnerable (White Paper for Social Welfare, 1996).

Approach to ageing

"There needs to be a shift away from the notion of 'care of the aged' to 'ageing', which can be defined as a holistic and positive approach, that recognises ageing as a natural phase of life without denying the special needs of older persons. The basic principle underlying ageing is to enable older persons to live active, healthy and independent lives for as long as possible. The family is the core of the support systems for the elderly" (White Paper for Social Welfare, 1996:94).

Community-based services

Community-based services with the family as the core support system should be the foundation of a new dispensation on ageing. A good balance should be struck between individual, family, community and government responsibility for older persons. Social systems to provide the elderly with essential social services should be developed (White Paper for Social Welfare, 1996:94).

Ethics and perceptions

A generally acceptable ethical viewpoint that addresses the needs and rights of the aged is a prerequisite for a just and responsible policy. A social commitment to a holistic approach to addressing the needs of the elderly is required.

"Different and changing perceptions of old age and the social status of older persons will affect society's understanding of their welfare needs. There needs to be a good balance between an emphasis on duration of life and quality of life (White Paper for Social Welfare, 1996:95)

National strategy

A national ageing strategy is being developed by the Department of Welfare together with all stakeholders. The following principles, guidelines and recommendations support the proposed transformation approach above (White Paper for Social Welfare, 1996):

- Every individual has the personal responsibility to provide for his or her retirement and old age.
- All organisations in civil society have the social responsibility to provide and care for their older members who are in need.
- Government has the responsibility to provide for the needs of disadvantaged, destitute and frail older persons who require 24-hour care and who do not have the financial resources to meet their own needs.
- Homes for older persons should provide only for the frail elderly. Provision of

frail care should be limited to a maximum of 2% of the number of persons over 65 years.

- All old age homes have a responsibility to provide essential outreach services in the community. Creative options are needed to accommodate elderly persons who are destitute or homeless.
- Appropriate, adaptable and affordable housing for older persons and their families is the cornerstone of any new dispensation. The Department of Welfare will co-operate with the Department of Housing to develop a strategy to address this need as a matter of priority.
- The Department of Welfare and welfare organisations will advocate increased access of the elderly to affordable primary health care and other basic social services, particularly in rural areas. The welfare sector will also co-operate with the Department of Health to facilitate access to nutritional programmes. These services and programmes are critical to ensuring that older persons remain in the community for as long as possible.
- All social policies and programmes will demonstrate a commitment to and promote the concept of integrating the aged into society, that is, a society in which ageing is a natural part of the life cycle.
- Social services to older persons in need will be community-based. Family care will be the baseline of age management programmes. Home care of elderly people will be encouraged. Capacity-building programmes will be provided to promote home care, including support programmes for care givers. Options such as day care, short-stay centres and outreach programmes will be explored.
- A plan of action with stakeholders to eliminate all forms of racial discrimination in government-funded services will be implemented immediately. Any planning concerning equity of services will be deeply sensitive to people's diverse values and traditions.
- The protection of the rights of older persons requires special attention given the prevalence of age discrimination, abuse and exploitation, particularly concerning social grants.

Strategy for social security for elderly people

- The government will advocate that all people in formal employment belong to a compulsory retirement scheme. Public education programmes will be provided to promote retirement planning.
- The government will also negotiate with other relevant stakeholders to ensure that retirement contributions are fully transferable when changing employment.
- Social assistance programmes will continue to be provided to support elderly people who qualify for such benefits.
- The development of a savings scheme will be explored to encourage individuals to take responsibility for their own retirement as well as to alleviate the pressure on the social grants system (White Paper for Social Welfare, 1996)

Grants for elderly persons

"Grants for elderly persons comprise a large proportion of overall social assistance. The number of elderly South African beneficiaries has stabilised, with fairly good coverage (80%), but there are still particular pockets where many eligible people do not get a grant. The impact of a grant income on household income for people in poverty is dramatic. The majority of people in poverty who are not white live in three-generation households, and the grant is typically turned over for general family use. In 1993, there were 7,7 million people in households that received a state grant. For black South Africans, each pensioner's income helped five other people in the household" (White Paper for Social Welfare, 1996:58).

Retirement dwellings in Gauteng

The South African Council for the Aged database (1996) states that there were 308 400 persons over the age of 65 years in Gauteng during 1996. To cater for their accommodation needs, 24 000 units or dwellings were developed with government funding and approximately a further 11 600 units or dwellings were privately developed. Thus, a total of 35 600 dwellings were established to meet the needs of 308 400 people over the age of 65, resulting in a service provision rate of 11,5%.

Different forms of housing and care provision are provided for the aged in Gauteng:

- Institutional care caters for 10,3% of the whites, 5,9% of the coloureds, 0,6% of the blacks.
- Sheltered housing: 4,2% of the whites have access to housing. No other groups are provided for.
- Community Services provide for 1,3% of the whites, 2,4% of the blacks, 3,9% of the coloureds, 1,5% of the Indians.
- There is retirement housing for the economically independent elderly.

It is important to note, that excluding residential care, community services are equally distributed, but are not sufficiently developed.

National guidelines state that homes for the aged must provide for the frail elderly only and should be limited to a maximum of 2% of the number of persons over the age of 65 years. Thus, according to the map, Oberholzer (1%), Cullinan (2%), and Alberton (2%), which fall in the 1 to 5% occupancy range and which are the worst-off districts deserve the most attention. To the south of Cullinan is Kempton Park and Bronkhorstspruit that also have service distribution for the aged. Adjacent to Oberholzer and Alberton are a cluster of rural districts (Westonaria, Vanderbijlpark, Springs, Vereeniging, Nigel, Heidelberg) that also deserve high priority.

The best-off districts are Pretoria (20%), which is surrounded by a cluster of districts (Krugersdorp, Randburg, Wonderboom) in the 11 to 15% occupancy range, and Germiston (20%), which is bordered by Boksburg and Brakpan. It is evident from this distinction between the best and worst-off districts, that the majority of services for the aged in Gauteng are racially segregated.

The racial segregation of services for the aged has meant a high number of destitute

black elderly. Added to the racial inequality in service distribution, is the fact that the black elderly also suffer inadequate residential facilities in townships. Dysfunctional family support systems prevail in the townships meaning that the elderly are left to care for themselves.

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The South African Council for the Aged

MAP 13 : PERCENTAGE POPULATION AGED 65 YEARS OR OLDER IN RETIREMENT DWELLINGS

Source . CSS 1991

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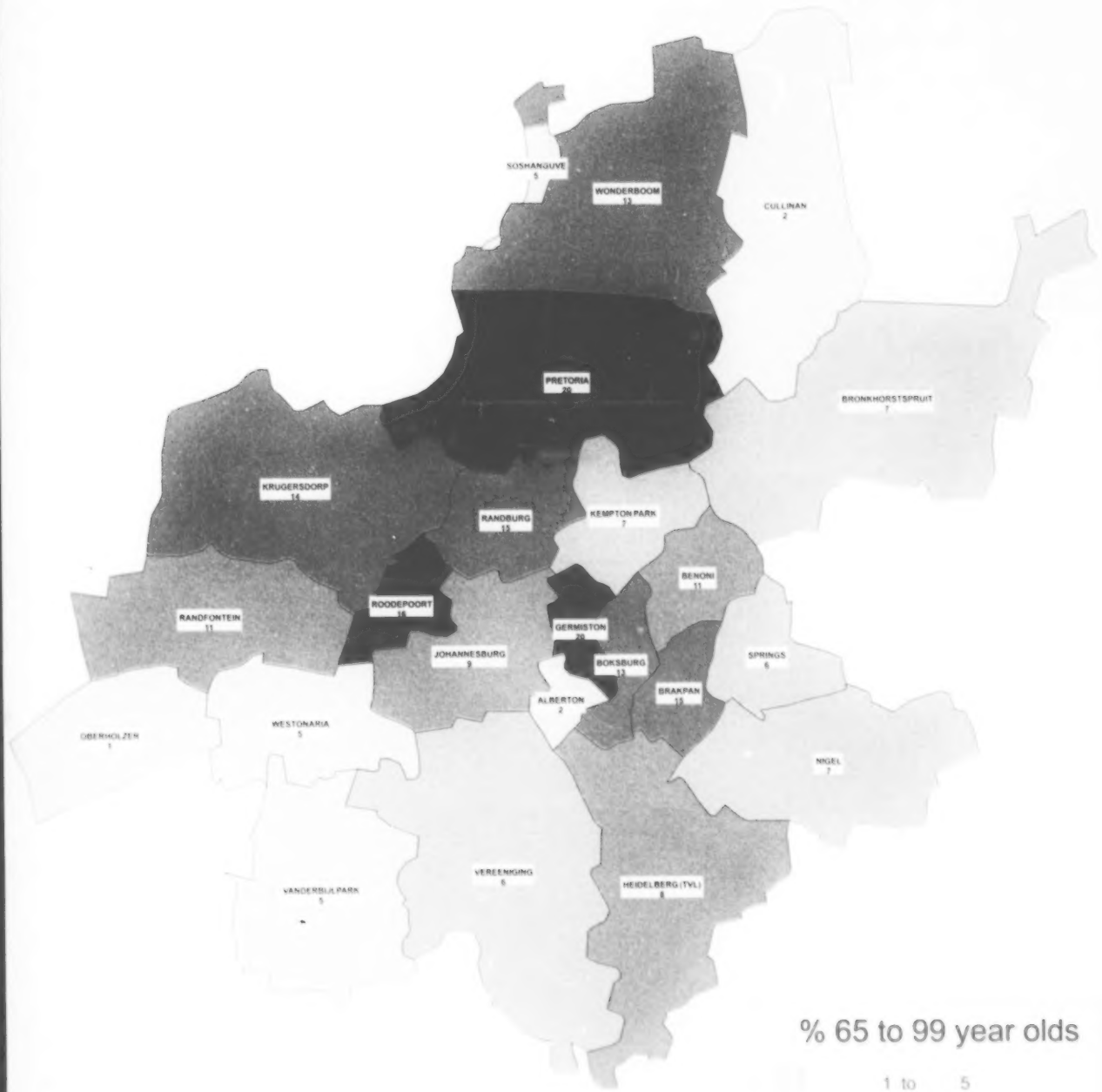

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Table 13 Percentage population aged 65 years or older in retirement dwellings

DISTRICT	INSTITUTION POPULATION	TOTAL AGED 65 - 99	% AGED / DWELLING
Alberton	181	10 854	2
Benoni	1 430	13 058	11
Boksburg	900	6 667	13
Brakpan	785	5 091	15
Bronkhorstspruit	121	1 857	7
Cullinan	20	1 058	2
Germiston	2 461	12 151	20
Heidelberg (GP)	183	2 381	8
Johannesburg	8 798	95 537	9
Kempton Park	726	10 790	7
Krugersdorp	1 118	8 010	14
Nigel	316	4 774	7
Oberholzer	18	2 854	1
Pretoria	7 773	39 365	20
Randburg	2 179	14 529	15
Randfontein	560	5 227	11
Roodepoort	1 606	9 881	16
Soshanguve	67	1 432	5
Springs	519	8 769	6
Vanderbijlpark	755	16 280	5
Vereeniging	712	11 442	6
Westonaria	115	2 454	5
Wonderboom	1 252	9 613	13

7.4 Water and sanitation

The sections covering the national water and sanitation goal, the basic service provision policy, reconstruction and development, the water supply and sanitation policy, water supply, the sanitation problem and its impact and looking ahead were abridged from the Water Supply and Sanitation Policy White Paper of November 1994 and the Draft National Sanitation Policy of June 1996.

National water and sanitation goal

The goal of the government is to ensure that all South Africans have access to essential basic water supply and sanitation services. This must be available at a cost that is affordable to households and the country as a whole.

Basic service provision policy

"The policy of the Department of Water Affairs and Forestry, in full support of the objectives and targets of the Government's Reconstruction and Development Programme, is to ensure that all South Africans can have access to basic water supply and sanitation services within seven years or less" (White Paper, 1994:15). The following section of the White Paper provides basic guidelines for the provision of services and for capacity building and training.

"The setting of guidelines and standards must be approached with caution. Guidelines are intended to assist decision making whilst standards are enforceable absolute limits. The rigid application of guidelines or inappropriate standards can have the opposite effect to that intended. An example would be the closure of 'sub-standard' water supplies which forces communities to revert to sources of even worse quality.

"Given that they are chosen to be the minimum needs to ensure health, the levels of service presented below should be seen as minimum standards to be applied in publicly funded schemes unless a relaxation has been specifically approved. This does not mean that higher standards cannot be applied. However, there is a direct correlation between the standard of service and the cost, both in terms of initial capital and operation and maintenance. Where higher standards of service are to be provided, the costs will not normally be supported by the programmes of the Department" (White Paper, 1994:15).

Reconstruction and development

"The Reconstruction and Development Programme (RDP) adopted by the Government of National Unity is more than a list of the services required to improve the quality of life of the majority of South Africans. It is not just a call for South Africans to unite to build a country free of poverty and misery. It is a programme designed to achieve this objective in an integrated and principled manner" (White Paper, 1994:1). The RDP principle of an integrated and sustainable programme has already been identified as critical to the success of service provision. It is of little value to have a water supply and sanitation strategy that is not part of a comprehensive development strategy.

"The need for development to be a people-driven process is fundamental. There is wide international experience that confirms the view that the provision of services in poor communities will fail if the people themselves are not directly involved. The involvement and empowerment of people is thus a cornerstone of the approaches proposed. One reflection of this must be the democratisation of the institutions at all levels of the sector since they are often among the first points of contact between communities and the organised State" (White Paper, 1994:6).

"Since water in particular can easily become a focus of conflict within and between communities, the development of effective delivery mechanisms must contribute to the RDP principle of achieving peace and security for all. Related to this, the very establishment of the goal of assuring that all South Africans have access to the basic services needed to ensure their health is a contribution to the process of nation-building" (White Paper, 1994:6).

Finally, the link between reconstruction and development remains a guiding concept. The RDP identifies the provision of infrastructure for services such as water supply and sanitation as one of the key elements of its strategy for developing the South African economy along its new path. The way in which services are provided must ensure that they do not simply satisfy people's basic needs, but also contribute to the growth of a dynamic economy, which is increasingly able to provide all South Africans with opportunities for a better life.

Water supply and sanitation policy

Policy principles

Local and international experience and the premises of the Reconstruction and Development Programme, have led to the adoption of the following principles as the basis for the policy that follows. These principles assume a context of universal human rights and the equality of all persons regardless of race, gender, creed or culture.

- **Development should be demand driven and community based**
  Decision making and control will be devolved as far as possible to accountable local structures. There is a reciprocal obligation on communities to accept responsibility for their own development and governance, with the assistance of the state.
- **Basic services are a human right**
  This refers to a right to a level of services adequate to provide a healthy environment. It does not imply the right of an individual person or community to demand services at the expense of others.
- **"Some for All", rather than "All for Some"**
  To give expression to the constitutional requirements, priority in planning and allocation of public funds will be given to those who are presently inadequately served.

- **Equitable regional allocation of development resources**
  The limited national resources available to support the provision of basic services should be equitably distributed among regions, taking account of population and level of development.
- **Water has economic value**
  The way in which water and sanitation services are provided must be in accordance with the growing scarcity of good quality water in South Africa in a manner that reflects their value and does not undermine long-term sustainability and economic growth.
- **The user pays**
  This is a central principle to ensure sustainable and equitable development, as well as efficient and effective management.
- **Integrated development**
  Water and sanitation development are not possible in isolation from development in other sectors. Co-ordination is necessary with all tiers of government and other involved parties. Maximum direct and indirect benefit must be derived from development in, for instance, education and training, job creation and the promotion of local democracy.
- **Environmental integrity**
  It is necessary to ensure that the environment is considered and protected in all development activities. Appropriate protection of the environment must be applied, including if necessary even prosecution under the law. Sanitation services that have unacceptable impacts on the environment cannot be considered to be adequate.
- **Sanitation is about health**
  Sanitation is far more than the construction of toilets, it is a process of improvements that must be accompanied by promotional activities as well as health and hygiene education. The aim is to encourage and assist people to improve their health and quality of life.
- **Sanitation is a community responsibility**
  Improvements in health through improved sanitation are most likely to be achieved when the majority of households in a community are involved. Sanitation is therefore a community responsibility, and this must be emphasised through sanitation awareness programmes (National Sanitation Policy, 1996).

Water supply

South Africa has a substantial economy with a well-developed infrastructure. However, significant inequalities exist in both distribution and access to the infrastructure. This is particularly applicable to domestic water, one of the fundamental needs.

History has shown that clean water is the single most important factor in sustainable primary health, and consequently productivity and growth of the country. Evidently water resources have a strategic interdependence that surpasses local interests if the country as a whole is to function effectively.

Many changes have taken place in South Africa since the national elections of April 1994. One of the most profound changes to impact on the future role of the Department of Water Affairs and Forestry (DWAF) was the incorporation of the

former homelands in the creation of nine national provinces. This has had the effect of a more equitable resource disposition and a desire to redirect resources to the poorer communities. At the same time it has exposed deficiencies in administration. To correct this basic imbalance a major community water and sanitation supply programme is required. The DWAF has taken up this challenge and has assumed a new role in the provision of community water supply and sanitation (CWSS).

Basic water supply is defined as:

- Quantity: 25 litres per person per day.
- Distance: the maximum distance that a person should have to cart water to his dwelling is 200 m.
- Quality: the quality of water provided as a basic service should be in accordance with currently accepted minimum standards with respect to health-related chemical and microbial contaminants. It should also be acceptable to consumers in terms of its potability (taste, odour and appearance).
- Flow: the flow rate of water should not be less than 10 litres a minute.
- Reliability: water availability should not fail due to drought more than one year in fifty, on average (White Paper, 1994).

The sanitation problem and its impact

Approximately 21 million South Africans do not have access to adequate sanitation facilities. Those who have inadequate sanitation may be using the bucket system, unimproved pit toilets or the veld. Furthermore, there is a disturbing increase in poorly designed or operated waterborne sewerage systems. When these fail, the impact on the health of the community and others downstream, and the pollution of the environment are extremely serious.

Inadequate excreta disposal facilities, combined with unhygienic practices, represent South Africa's sanitation problem. Often the unhygienic practices are related to

- a lack of access to health and hygiene education,
- inadequate water supplies,
- poor facilities for the safe disposal of water and other domestic waste,
- inadequate toilet facilities (National Sanitation Policy, 1996:1).

The effects of the sanitation problem are threefold:

- **Health impact** - the impact of inadequate sanitation on the health of the poor is significant in terms of the quality of life, and the education and development potential of communities.
- **Economic impact** - poor health keeps families in a cycle of poverty and lost income. The national cost of lost productivity, reduced educational potential and curative health care is substantial.
- **Environmental effects** - inadequate sanitation leads to dispersed pollution of water sources. This in turn increases the cost of downstream water treatment, as well as the risk of disease for communities who use untreated water (National Sanitation Policy, 1996).

Implementation approach

"The absence of a coherent national programme to improve community sanitation has left an obvious legacy. Nearly half of South Africa's population does not have, within their own homes, the healthy environment promised to them by the Constitution. There is a glaring need for a structured programme to address this problem.

"Given the limited practical experience in the field and the evolving institutional arrangements at local level, such a programme must be flexible enough to develop and change over time. It must build on the lessons of experience and reinforce the role of local government as the implementers of service provision.

"It is therefore proposed that there be an initial two-year start-up phase. During this period, there should be an increase in funding to sanitation to start a limited number of projects in all of the Provinces. Existing pilot projects and research will continue, as will the development of the health and hygiene and capacity building 'software'. The consultation process must also continue" (National Sanitation Policy, 1996:28).

Experience gained from these activities will then be used to design and launch a full-scale national programme that can meet the ambitious goals set for the sector of meeting the basic needs of all South Africans within ten years.

7.4.1 Access to sanitation facilities

The data source for this provincial analysis was the NELF database developed by ESKOM in 1994. The accuracy of this database has been questioned within ESKOM. This can be tested by summing the percentages of households with access to in-house water, garden taps only, community taps only and no water supply. This should total 100%, and of the 23 districts in Gauteng 22 have total percentages of over 99. Only Heidelberg, with a total percentage of 75, has obviously unreliable data.

Households with access to bucket toilets and pit latrines

According to the map, the data for this indicator fall very neatly into four major and easily distinguishable groupings:

(i) **Northern peripheral districts**
These districts (which include Soshanguve, Wonderboom, Cullinan and Bronkhorstspruit) are located to the north of Pretoria and have the poorest profile in relation to the percentages of households served by pit and bucket toilets. Percentages of pit and bucket toilets range between 46% for Wonderboom and 78% for Cullinan.

(ii) **Southern peripheral districts**
The southern peripheral districts (Vanderbijlpark, Vereeniging, Alberton, Heidelberg and Nigel) present a similar, if slightly more favourable, profile to the northern districts. Percentages of bucket and pit toilets range between 36% and 45% for these areas. Of this grouping the worst profiles are those of Heidelberg (45%) and Vanderbijlpark (43%), while the remaining three districts have percentages ranging between 36% and 37%.

(iii) **Pretoria-Westonaria axis**
Four districts (Pretoria, Randburg, Roodepoort, Westonaria and Germiston) in this area which presents the most favorable profile in terms of the relatively small numbers of pit and bucket toilets are located on a clear axis running from Pretoria in the north to Westonaria in the south-west, but Germiston on the East Rand is also included. Percentages of pit and bucket toilets range from 1% in Germiston to 18% in Randburg.

(iv) **Remaining or central districts**
These districts are all centrally located between Pretoria and Bronkhorstspruit in the north and the southern peripheral districts. Percentages of pit and bucket toilets range between 21% in Boksburg and 33% in Randfontein and Springs. Two subgroups can be distinguished: Randfontein, Springs and Kempton Park with percentages ranging between 28% and 33%, and the remaining districts of Krugersdorp, Oberholzer, Johannesburg, Boksburg, Benoni and Brakpan with slightly better profiles.

Households with waterborne sewerage or septic tanks

Although according to the map the patterns are not as clear as those for the previous indicators, similar tendencies are evident in the distribution of waterborne sewerage and septic tanks as in the distribution of pit and bucket toilets. This is not surprising as these two indicators together cover the major toilet facilities available in the province.

(i) **Northern and southern peripheral areas**

As for pit and bucket toilets, the northern and southern peripheries are clearly distinguished by the relatively small percentages of households with access to waterborne toilets and septic tanks. Although the profiles of Soshanguve, Cullinan, Bronkhorstspruit, Vanderbijlpark and Heidelberg are relatively worse than the remaining districts in these peripheries, the northern and southern peripheries account for all districts with 66% and fewer households with waterborne sewerage and septic tanks. The only exception is Randfontein which with 66% is a borderline case.

(ii) **Pretoria-Westonaria axis and Germiston**

As for the previous indicator, these five districts show the most favourable profile of all the districts in the province. Although Randburg has a slightly less favorable position, with 82% of households having access to waterborne sewerage or septic tanks, this percentage is higher than other districts in the province.

(iii) **Central and East Rand districts**

The districts of Randburg, Johannesburg, Boksburg, Benoni and Brakpan also have greater access to waterborne sewerage or septic tanks, although their position is slightly less favorable than that of Pretoria, Roodepoort, Westonaria and Germiston.

(iv) **Remaining districts of Krugersdorp, Oberholzer, Kempton Park and Springs**

These four districts, located on the western and eastern peripheries of the province, reflect an average position between the unfavourable conditions in the northern and southern peripheries and the more favourable conditions in the central and East Rand districts.

T. Emmett
Human Sciences Research Council

MAP 14 : PERCENTAGE HOUSEHOLDS WITH ACCESS TO BUCKET AND PIT LATRINE FACILITIES

Source : NELF Database

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% bucket or pit

1 to	18
18 to	27
27 to	33
33 to	45
45 to	78

N

KM

25

Table 14 Percentage households with access to bucket and pit latrine facilities

DISTRICT	TOTAL HOUSEHOLDS	HOUSEHOLDS WITH BUCKET LATRINES	HOUSEHOLDS WITH PIT LATRINES	% HOUSEHOLDS WITH BUCKET AND PIT LATRINES
Alberton	100 524	4 178	32 201	36,2
Benoni	68 221	3 592	14 320	26,3
Boksburg	50 098	2 288	8 262	21,1
Brakpan	32 285	984	7 430	26,1
Bronkhorstspruit	8 725	56	5 746	66,5
Cullinan	6 861	122	5 230	78,0
Germiston	49 851	463	0	0,9
Heidelberg (GP)	24 666	728	10 339	44,9
Johannesburg	389 310	17 864	77 546	24,5
Kempton Park	104 831	5 487	24 325	28,4
Krugersdorp	45 027	921	11 116	26,7
Nigel	20 449	990	6 462	36,4
Oberholzer	35 079	1 689	7 670	26,7
Pretoria	207 630	2 441	10 803	6,4
Randburg	93 207	3 583	13 432	18,3
Randfontein	23 619	1 155	6 714	33,3
Roodepoort	59 404	2 073	6 077	13,7
Soshanguve	31 055	2 793	13 663	53,0
Springs	37 330	1 410	10 832	32,8
Vanderbijlpark	95 098	5 358	35 097	42,5
Vereeniging	98 879	4 364	31 935	36,7
Westonaria	32 435	1 163	1 566	8,4
Wonderboom	58 342	1 583	25 284	46,1

MAP 15 : PERCENTAGE HOUSEHOLDS WITH ACCESS TO SEPTIC TANK OR WATERBORNE LATRINE FACILITIES

Source : NELF Database

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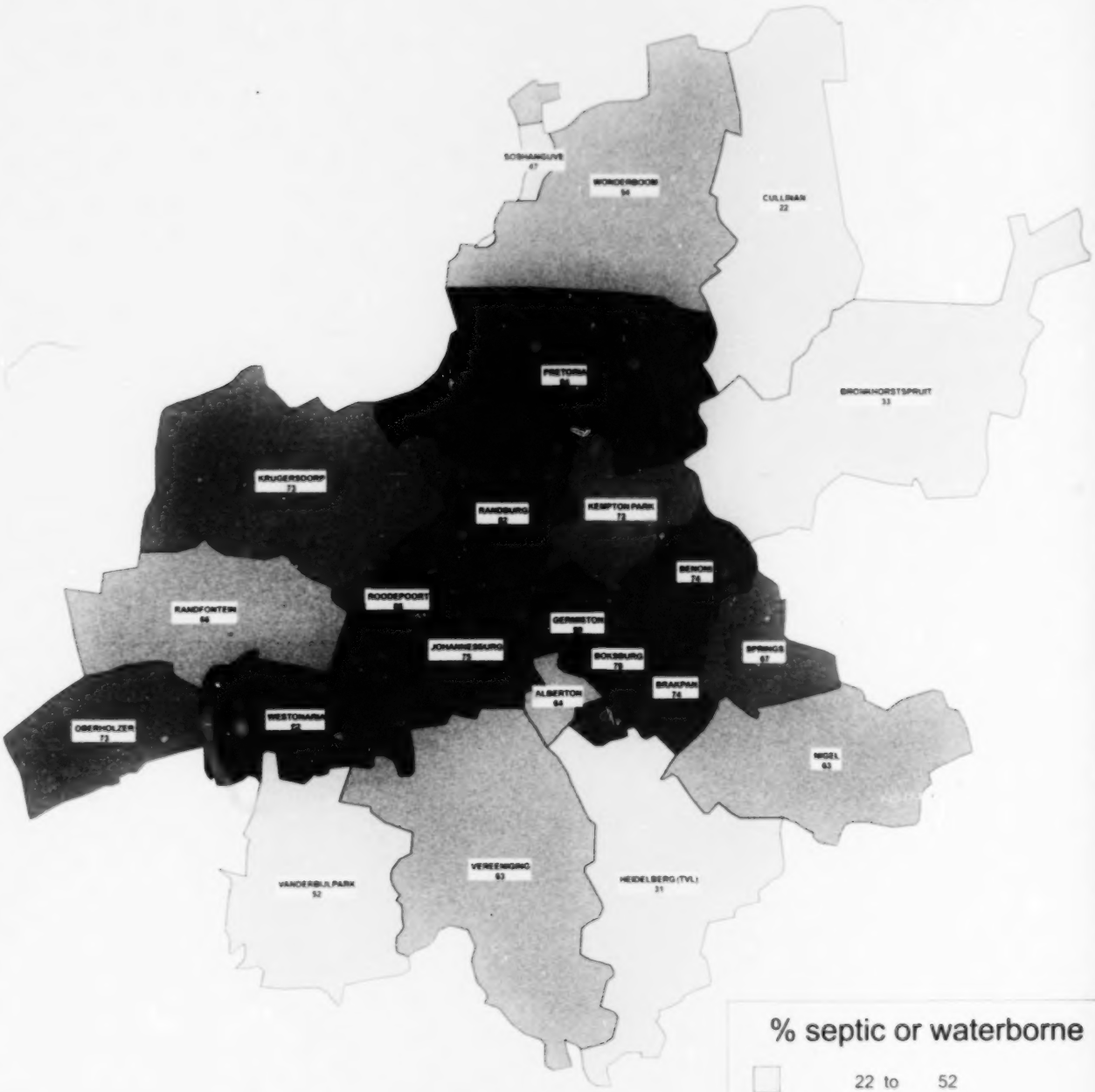

% septic or waterborne

22 to	52
52 to	66
66 to	73
73 to	82
82 to	99

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N

KM

25

Table 15 Percentage households with access to septic tank or waterborne latrine facilities

DISTRICT	HOUSES	WATERBORNE	SEPTIC TANK	% WATERBORNE AND SEPTIC TANK
Alberton	100 524	64 113	0	63,8
Benoni	68 221	50 242	33	73,7
Boksburg	50 098	39 500	0	78,8
Brakpan	32 285	23 855	0	73,9
Bronkhorstspruit	8 725	2 219	690	33,3
Cullinan	6 861	969	529	21,8
Germiston	49 851	49 318	0	98,9
Heidelberg (GP)	24 666	6 938	640	30,7
Johannesburg	389 310	293 446	193	75,4
Kempton Park	104 831	74 893	88	71,5
Krugersdorp	45 027	31 575	1 359	73,1
Nigel	20 449	12 752	212	63,4
Oberholzer	35 079	25 573	130	73,3
Pretoria	207 630	193 855	370	93,5
Randburg	93 207	76 050	46	81,6
Randfontein	23 619	14 975	716	66,4
Roodepoort	59 404	51 113	72	86,2
Soshanguve	31 055	14 595	0	47,0
Springs	37 330	24 990	49	67,1
Vanderbijlpark	95 098	49 278	431	52,3
Vereeniging	98 879	61 462	1 052	63,2
Westonaria	32 435	29 431	252	91,5
Wonderboom	58 342	30 879	562	53,9

7.4.2 Access to water facilities

Households with access to community taps only

With very few exceptions, the distribution of community taps as the major source of water supply follows the same general pattern as the distribution of pit and bucket latrines. The disadvantaged northern and southern peripheries and the more privileged Pretoria-Westonaria axis (including Germiston) are all clearly evident in the maps. Off-site water supply and pit and bucket toilets are not only related to each in terms of general levels of development, but clearly on-site water supply is necessary to support waterborne sewerage.

(i) **Northern peripheral districts**
As for pit and bucket toilets, community taps as a source of water supply are most prevalent in the northern peripheral districts of Soshanguve, Wonderboom, Cullinan and Bronhorstspruit. With 24% of households dependent on communal taps, Wonderboom has a slightly better profile than the three other northern districts.

(ii) **Southern peripheral districts**
The southern peripheral districts (Vanderbijlpark, Vereeniging, Alberton, Heidelberg and Nigel) present a similar, if slightly more favourable, profile to that of the northern districts. Vanderbijlpark, Nigel and Brakpan have slightly higher percentages of community taps than Vereeniging and Heidelberg .

(iii) **Pretoria-Westonaria axis, and Germiston**
As for pit and bucket toilets, these districts present the most favourable profile in terms of the relatively small numbers of community taps. Percentages of community taps are below 14% for all of these districts.

(iv) **Remaining or central districts**
As for pit and bucket toilets, these districts which are centrally located between Pretoria and Bronkhorstspruit in the north and the southern peripheral districts, span a middle or average range of values (15% to 21%), between the relatively privileged status of the Pretoria-Westonaria axis and the disadvantaged status of the northern and southern peripheries.

Households with access to on-site water provision

Households with running water in the house or in the garden only fall into this category. Districts with over 75% provision are clustered around the central and western urbanised region of the province. The peripheral north and north-eastern districts of Soshanguve, Wonderboom, Cullinan and Bronkhorstspruit have less than a 56% provision of on-site water, their percentage provision being 48, 54, 27 and 37%, respectively. Other districts with a provision of less than 56% in the south of the province are Vanderbijlpark and Heidelberg with 53 and 33%, respectively. Districts with between 56 and 71% are in the south-eastern, southern and western parts of the province. The districts in the 56 to 71% range are Randfontein (70), Alberton (64), Vereeniging (66), Springs (68) and Nigel (65).

Interpretation of the indicators

According to the relevant maps (14, 15, 16 and 17), three of the four indicators display clear patterns based on geographical location. For example, it is clear that poor service conditions exist in the northern and southern peripheries of Gauteng, while conditions in the core or central districts such as Pretoria, Randburg, Roodepoort and Germiston are relatively good. In general therefore one may argue that it is to be expected that conditions will be poor in peripheral areas which are generally less urbanised and industrialised, and services in these areas will be less well developed than in the core urban areas. While there is some truth in this assertion, the situation is more complex.

Firstly, the distribution of services in Gauteng needs to be understood against the background of the impact of apartheid policies on settlement patterns. Apartheid residential planning led to the concentration of working-class Africans to the south-west of Johannesburg and to the north of Pretoria. According to the 1991 Census, the highest concentrations of the African population were found in Soshanguve (99%), Vanderbijlpark (84%), Oberholzer (81%), Alberton (79%) and Heidelberg (77%). In the context of the extreme inequalities in the access of racial groups to water supply and sanitation services (see, for example, Emmett & Rakgoadi, 1993), districts with high concentrations of Africans (the most disadvantaged of the racial groups) generally have poor services.

Although Gauteng is a predominantly urbanised province, some districts include relatively large rural populations. In 1991 this was particularly true for Cullinan (with 73% rural population) and Bronkhorstspruit (71%), although relatively large rural populations were also found in Heidelberg (20%), Krugersdorp (18%), Randfontein (14%), Nigel (14%), Wonderboom (13%) and Westonaria (10%).

Another important variable in the level of water supply and sanitation is the distribution of different types of housing in the districts. For informal housing particularly, water supply and sanitation services are often limited, although in some cases, such as sites and service schemes, relatively advantaged toilet facilities may be provided, together with more rudimentary water supply services. At the time of the 1991 Census, for example, Heidelberg, Westonaria and Oberholzer had between 46% and 55% of their households living in informal housing. Bronkhorstspruit, Nigel, Vanderbijlpark and Alberton also had between 31% and 39% of households occupying informal housing. Soshanguve, Brakpan, Benoni, Vereeniging, Cullinan and Randfontein fell into an intermediate group with between 20% and 28% of households in informal housing. The remaining districts had fewer than 20% of households occupying informal housing, although Germiston, Pretoria and Boksburg with only 1% to 2% of households informally housed had the greatest advantage.

In general, the northern periphery (Soshanguve, Wonderboom, Cullinan and Bronkhorstspruit) are disadvantaged with regard to both water supply and sanitation. However, one can distinguish between Cullinan and Bronkhorstspruit which are essentially rural districts, and Soshanguve which is essentially urban, but has a predominantly African population. Wonderboom is a more marginal case in that, although it has a relatively large African population and a larger than average rural population, it is linked to Pretoria and has a strong industrial sector. Furthermore,

although it has a relatively high percentage of pit and bucket latrines, this percentage is lower than the other three northern peripheral districts. Wonderboom also has a different (somewhat more advantaged) profile for water supply than the other three districts.

With regard to the southern periphery (Vanderbijlpark, Vereeniging, Alberton, Heidelberg and Nigel), it is noteworthy that a number of these districts registered relatively high African populations in the 1991 Census. This was particularly true for Vanderbijlpark (84%), Alberton (79%) and Heidelberg (77%). Heidelberg and Nigel also had relatively large rural populations. In addition, all of these districts had relatively high percentages of households living in informal housing.

The maps show the Pretoria-Westonaria axis (including Germiston) to be relatively advantaged with regard to toilet facilities and dependence on off-site water supplies. With the exception of Westonaria, these districts were found to have a relatively low African population in 1991, particularly Germiston (20%), Pretoria (26%) and Roodepoort (42%). With 53%, Randburg was somewhat higher, but still below the average. Again, with the exception of Westonaria, these districts also had low percentages of households living in informal housing.

Against this background, the relatively favourable profile for Westonaria requires explanation. In relation to its geographical location, the high percentage of its population occupying informal housing and its relatively large rural population, one would expect Westonaria (and the neighbouring district of Oberholzer) to have had a similar (disadvantaged) profile to the districts of the southern periphery. Yet Westonaria (and, to a slightly lesser extent, Oberholzer) appears to be relatively advantaged with regard to toilet facilities and on-site water supplies, although it has a relatively high percentage of yard taps. The reasons for these discrepancies would appear to be related to the fact that as predominantly mining districts, both Westonaria and Oberholzer have exceptionally, high percentages of their populations living in hostels. Although levels of services vary between hostels, many have flush toilet facilities and on-site water supplies (although not necessarily inside the buildings). A further possibility is that Westonaria may have a relatively large number of site and service schemes with waterborne sewerage or septic tanks and garden taps.

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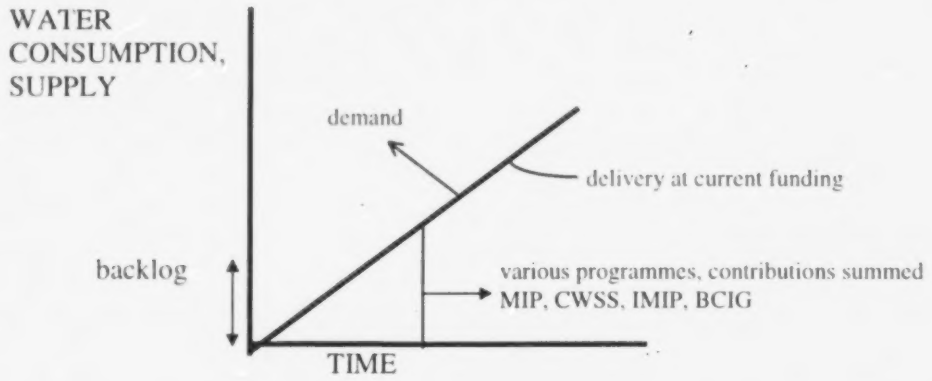
Difficulties in meeting basic needs

Funding levels are so low compared with the need that a limited impression is being made on backlogs. In fact, if the rate of delivery is modelled against the rate of growth in demand for services it is doubtful that the minimum standards can be supplied. The graph below indicates that services backlogs will diminish in the medium term. However, in the longer term at current levels of funding backlogs are likely to increase. Population growth and growth in the housing stock will create higher levels of demand.



Strategies for managing the long-term problem of increasing backlogs are required. It may be necessary to revise policies on long-term bulk component investment and short-term local supply solutions. Bulk reticulation projects make large demands on allotted funds. To increase the rate of delivery at current funding levels it may be necessary to use a combination of bulk reticulation and local supply solutions. It is also essential to co-ordinate programmes undertaken by the government at national, provincial and local levels.

While a Social Needs and Service Provision Index may be useful for future analyses and planning, the following queries should be considered:

- The cost of maintaining such a database and the relevance of the data captured
- The relevance of district assessment when the supply need is at a community level

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Department Water Affairs and Forestry

MAP 16 : PERCENTAGE HOUSEHOLDS WITH ACCESS TO ON SITE WATER FACILITIES

Source : NELF Database

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Table 16 Percentage households with access to on-site water facilities

DISTRICT	UNITS	IN-HOUSE	ON-SITE	% IN-HOUSE AND ON-SITE WATER
Alberton	100 524	44 258	20 316	64
Benoni	68 221	40 591	10 743	75
Boksburg	50 098	37 893	2 437	81
Brakpan	32 285	19 849	4 311	75
Bronkhorstspruit	8 725	2 225	980	37
Cullinan	6 861	1 168	679	27
Germiston	49 851	48 359	1 488	100
Heidelberg (GP)	24 666	6 089	2 060	33
Johannesburg	389 310	265 037	32 609	76
Kempton Park	104 831	52 392	23 647	73
Krugersdorp	45 027	29 215	4 217	74
Nigel	20 449	9 779	3 497	65
Oberholzer	35 079	19 186	6 878	74
Pretoria	207 630	185 195	11 204	95
Randburg	93 207	69 381	7 980	83
Randfontein	23 619	14 128	2 444	70
Roodepoort	59 404	49 238	3 046	88
Soshanguve	31 055	10 677	4 226	48
Springs	37 330	23 527	1 960	68
Vanderbijlpark	95 098	36 863	13 637	53
Vereeniging	98 879	39 190	25 699	66
Westonaria	32 435	19 698	11 135	95
Wonderboom	58 342	28 583	2 741	54

MAP 17 : PERCENTAGE HOUSEHOLDS WITH ACCESS TO OFF SITE WATER FACILITIES

Source : NELF Database

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Table 17 Percentage households with access to off-site water facilities

DISTRICT	HOUSES	COMMUNITY TAP	% HOUSES ACCESSING COMMUNITY TAPS ONLY
Alberton	100 524	31 628	31,5
Benoni	68 221	13 114	19,2
Boksburg	50 098	7 699	15,4
Brakpan	32 285	7 430	23,0
Bronkhorstspruit	8 725	2 825	32,4
Cullinan	6 861	2 463	35,9
Germiston	49 851	0	0,0
Heidelberg (GP)	24 666	5 273	21,4
Johannesburg	389 310	72 018	18,5
Kempton Park	104 831	22 484	21,4
Krugersdorp	45 027	8 430	18,7
Nigel	20 449	5 008	24,5
Oberholzer	35 079	6 921	19,7
Pretoria	207 630	8 413	4,1
Randburg	93 207	12 308	13,2
Randfontein	23 619	3 579	15,2
Roodepoort	59 404	5 433	9,1
Soshanguve	31 055	12 731	41,0
Springs	37 330	6 411	17,2
Vanderbijlpark	95 098	26 622	28,0
Vereeniging	98 879	20 262	20,5
Westonaria	32 435	885	2,7
Wonderboom	58 342	14 211	24,4

7.5 Electricity

Introduction

Experience in other countries shows that substantial economic growth is not achieved until the large majority of the population has access to electricity. Electrification and economic growth go hand in hand. This does not mean that introducing electricity to an underserviced area without other social and infrastructural services is going to positively influence "rural-urban migration, population growth, education and literacy" (Golding:1992:2). "It is only in countries such as the USA where broad rural development and employment programmes, in conjunction with electrification, have significantly improved the rural quality of life and reduced rural to urban migration" (Golding, 1992:2).

"Eskom has accelerated its electrification thrust over the past two years and its programme is on target. Eskom has electrified 639 741 homes since the electrification drive began at the end of 1990. This programme will positively affect the lives of more than eleven million people, giving them access to a clean, affordable and convenient source of energy and allowing them to become part of a modern industrially developing society" (Maree, 1995:3).

The electrification project

The electrification project began in 1990 in order to bring the benefits that access to electricity brings to more South Africans.

"In 1992 a survey was conducted in South Africa to determine the status of electrification in cities and towns, in trust areas, and in TBVC countries and national states. It was revealed that out of a total of 7,2 million homes, only 3 million were at that stage provided with electricity. This left an enormous 4,2 million homes without, only about 2 million of which could possibly be furnished cost effectively with electricity. The remainder would be difficult to electrify due to either the structure of the dwelling, the distance from the existing grid, lack of access to alternative energy sources, or simply as a matter of affordability" (The Electrification Project, 1995:1).

Once it was agreed that little economic growth could occur without the widespread use of electricity, Eskom committed itself to the electrification of almost one million homes over the following five years, in areas where it had the right to supply. Given the economic recession, the time was ripe to put innovative technology to the test. Eskom decided to follow the route of the "prepayment meter or electricity dispenser" (The Electrification Project 1995:1), which had been used successfully in other countries.

Electricity supplies in rural areas

Both dense and scattered rural settlements, which are located primarily in former homeland areas, have exceptionally low levels of access to electricity. Furthermore, demographic and electrification data concerning farm workers on commercial farms

appear to be inadequate to support electrification planning.

"Many of the homes still needing electricity are situated far from the national grid in remote rural areas with a low-density population. At present only 12% of rural households have access to electricity. Eskom's electrification programme will raise this figure to 30% in 1999 and will have a positive effect on quality of life. The cost of bringing network electricity to such areas will be very high. Eskom is constantly researching ways to substantially reduce the cost of rural electrification through appropriate technology" (Morgan, 1995:7).

Eskom and the RDP

Following the adoption of the Reconstruction and Development White Paper by parliament, Eskom published ten commitments demonstrating its support of the RDP. Many of these activities were already under way in the organisation and therefore reflect a change in degree rather than direction for Eskom.

Eskom undertook the following:

- Further reduce the real price of electricity by 15%, so as to become the world's lowest cost supplier of electricity
- Electrify an additional 1 750 000 homes, improving the lives of 11 million South Africans
- Change the staffing profile, so that 50% of management, professional and supervisory staff would be black South Africans
- Educate, train and upgrade sufficient numbers of people to meet Eskom's future managerial, technical and other professional staff needs, *inter alia* by employing 370 black trainees and bursars per year, and enabling all Eskom employees to become literate
- Maintain transparency and engage in worker consultation in decision making
- Contribute R50 million per year to electrification of schools and clinics, and other community development activities, particularly in rural areas
- Enable all Eskom employees to own a home
- Encourage small and medium enterprise development, through Eskom's buying policies and giving of managerial support
- Protect the environment
- Finance the above from own resources and from overseas development funding (Morgan, 1995).

National electrification planning - resources and institutions

"There is no national institution capable of co-ordinating and planning the national electrification programme. At present, planning takes place within each distribution agency, and Eskom assumes responsibility for the bulk of the connections targeted annually. Many municipal distributors have embarked on electrification programmes and conduct in-house planning. However, there is no overall national co-ordination of these activities, and no mechanism to ensure that the targets set by the RDP will be met. Eskom dominates planning for the electrification programme and its implementation, but has no jurisdiction in regions outside its supply areas.

The National Electricity Regulator may be in a position to fill this institutional vacuum, but at present has limited capacity to monitor progress or to undertake detailed planning" (Davis,1996: 477).

"Resources are also limited. Despite improvements over the past few years, there are large inadequacies in the data for many areas of the country. Eskom has begun to refine the demographic and electrification data, but is likely to concentrate on its own areas of supply. It will be some time before these data resources are developed to a point where accurate supply-side and demand-side information is available for the many municipal distributors around the country" (Davis,1996: 477).

"Despite the limitations, national electrification targets have been set, at least until the year 2000, and the success of the programme will inevitably be judged in relation to these targets. But are national targets desirable? Although they have succeeded in increasing the rate of electrification, they favour a centralised planning and implementation system. But not only does centralised planning require extensive resources, it also affects the process of electrification and the ability of communities to participate in it effectively. The alternative approach is decentralised and demand-driven, with control over investment decisions located at lower tiers. Under this system, there is less need for a national planning institution. Instead more emphasis is placed on the need to monitor progress and provide adequate support to lower-tier organisations" (Davis,1996: 477).

NELF and the regulator

"The National Electrification Forum (NELF) has completed the majority of its work and made an initial recommendation to Government that the distribution sector of the industry should be rationalised, national tariff systems should be implemented and that a national electricity regulatory authority should be established to oversee the industry. The result will be that many local government's will retain the right of supply in their areas. The National Electricity Regulator (NER) will be responsible for licensing all suppliers and ensuring that they perform to set standards" (Morgan, 1995:13).

This means that Eskom will have to be licensed and in future will be subject to regulatory jurisdiction. Also, Eskom will become responsible for supplies in large areas of the previous TBVC states and self-governing territories, while possibly handing over staff and assets in some urban areas where it is presently operative.

Community relations

Small business development and job creation

"The electrification programme provides employment for over 4 000 people involved in construction: 2 200 from Eskom and the balance as contractors employed by Eskom. In addition, about 2 300 people are employed in the local manufacturing industry to provide the materials required. Over a thousand people are employed in marketing, maintenance and administration functions in newly electrified areas. Where possible, Eskom uses subcontractors from small businesses

in underdeveloped and electrification areas. Training programmes aim at employing members from the local community. Capital development projects affected more than a million people in 1994" (Morgan, 1995).

Community development

Eskom actively promotes community development through programmes designed to assist disadvantaged communities with a strong emphasis on education. Only projects at grassroots level with community support and accountability are supported. Over the past four years funding has risen from R4 million to approximately R40 million annually.

"In support of the electrification programme and Eskom's RDP commitments, Eskom increased its community development contribution by electrifying 562 schools and 21 clinics in 1994. During 1994, the Norwegian Agency for Development Cooperation pledged R15,2 million in grant funding for the electrification of schools and clinics" (Morgan, 1995).

7.5.1 Electrification of formal housing

Electricity in Gauteng province is mainly provided through two agencies, Eskom and various local authorities. Currently each of these agencies distributes electricity in terms of their respective distribution licences. Licences are issued by the NER. Eskom's current role in providing electricity is twofold:

- The provision of bulk electricity to local authorities. These local authorities redistribute to individual users within the respective licence areas. This accounts for 52% of all (formal and informal) household connections.

- Direct provision of electricity to individual users. These users can be large power users as well as domestic households within the current Eskom licence area in Gauteng. Eskom provides directly to 26% of the province's domestic consumers.

Solar power and small generators are used in two per cent of households. Nineteen per cent of households have no access to electricity. Alternative energy sources (i.e. wood, coal, paraffin) are still used by unelectrified households.

Electricity in the province can be more effectively provided by applying the following:

- Aggregate planning to produce a master plan for the whole province. The compilation of this master plan should involve all stakeholders (i.e. provincial government, local authorities and Eskom)
- Integrated planning and execution of service provision projects (i.e. electricity, water, telephones and sewerage)
- Resolving the non-payment issue

Access to electricity in Gauteng

The population of Gauteng is centred mainly in the major urban towns and cities, while there are fewer households in the rural areas. It must be emphasised that the

current Eskom licence area covers some but not all these rural areas. Local authorities are also involved in their rural areas. Where rural areas fall under the Eskom licence, supporting networks usually exist. Factors such as relatively small scattered settlements make electrification difficult from a cost point of view. Farm labourers' homes are included in this category, thus their electrification is sometimes done in co-operation with the farm owner.

The following factors make electrification in rural and/or urban areas difficult:

- Areas used for transit while people wait to move to more permanent sites, such as Wheelers Farm
- The proclamation of settlement sites not being controlled by Eskom
- Settlement in a proclaimed area not following the town layout
- Economies of scale pushing rural areas lower down the priority list

Low-cost housing developments, subsidised by the Provincial Housing Board, are taking place. As most of these developments will be in the urban areas, the demand for electricity will increase, thus pushing the rural areas further down the priority list and making the rural areas less attractive for the provision of electricity.

Electrified formal housing

Mapped average data based on geographical areas like magisterial districts provide a uniform picture. However, Eskom and local authority licence areas do not always follow magisterial district boundaries, which can make the presentation of data difficult. To enhance their relevance, data at place level (extent within a town) should be provided.

The map indicates that the districts falling into the lowest range of provision (59-63%) are Vanderbijlpark (62%), Westonaria (63%), Alberton (59%), Brakpan (63%), Nigel (63%) and Soshanguve (67%). There are four districts in the second range (67-75%): they are Krugersdorp (69%), Randfontein (75%), Heidelberg (68%) and Benoni (72%). These two lower ranges form two distinct clusters, one in the south-west and the other in the south east. With the exception of Soshanguve in the north, all the areas of relatively low provision are towards the south of the province. The two upper ranges (84-100%) of provision are clustered in the centre and north-east of the province. Cullinan is shown to have 100% provision, which should be treated with some caution as the data reflect a higher number of formal houses electrified than there are formal service points.

B.W. Richter
Eskom

MAP 18 : PERCENTAGE FORMAL HOUSES ELECTRIFIED

Source : NELF Database

HSRC
RGN
GIS UNIT

% units electrified

59 to	63
63 to	75
75 to	80
80 to	93
93 to	100

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Table 18 Percentage formal houses electrified

DISTRICT	TOTAL ELECTRIFIED FORMAL HOUSES	TOTAL SERVICE POINTS	% ELECTRIFIED HOUSES
Alberton	38 154	64 459	59
Benoni	35 606	49 157	72
Boksburg	43 736	46 633	94
Brakpan	15 365	24 471	63
Bronkhorstspruit	3 451	3 729	93
Cullinan	3 315	3 315	100
Germiston	47 148	48 363	97
Heidelberg (GP)	5 899	8 678	68
Johannesburg	281 647	330 616	85
Kempton Park	54 936	71 969	76
Krugersdorp	25 964	37 865	69
Nigel	8 013	12 679	63
Oberholzer	17 002	21 692	78
Pretoria	182 244	192 830	95
Randburg	69 150	78 160	88
Randfontein	14 358	19 243	75
Roodepoort	50 051	54 157	92
Soshanguve	14 821	22 246	67
Springs	29 108	32 259	90
Vanderbijlpark	40 481	65 667	62
Vereeniging	41 910	54 615	77
Westonaria	13 132	20 749	63
Wonderboom	36 454	45 698	80

7.5.2 Electrification of informal housing

The lowest range of provision indicated on the map is 8 to 20% and includes Oberholzer (8%), Westonaria (18%), Alberton (20%), Brakpan (8%) and Nigel (13%). When the two lowest ranges are taken together, a similar pattern emerges as for electrified formal housing: the regions of lower provision are in the south-west and south-east of the province. Randburg (28%) in the centre and Wonderboom (32%) in the north are also in the second lowest range. Pretoria (70%) and Germiston (61%) are the two districts with the highest levels of provision.

The following districts fall into the lower two ranges of either informal or formal electrified housing: Vanderbijlpark, Westonaria, Alberton, Brakpan, Nigel, Soshanguve, Krugersdorp, Randfontein, Heidelberg, Benoni, Oberholzer, Wonderboom, Bronkhorstspruit and Randburg.

Current electrification in Gauteng

An examination of Table 18a shows that electrification initiatives are proceeding in most of the districts that fall into the lower two ranges of provision of electricity in formal and informal housing and also in some other districts. Projects marked * are areas that have been taken over by Eskom. The figures given represent new connections made to date (inception to date: ITD, and year to date: YTD).

Table 18a Electrification projects

PROJECT NAME	MAGISTERIAL DISTRICT	ITD 1995	YTD 1996	ITD 1996
Ivory Park	Kempton Park	13 727	161	13 888
Daveyton/Etwatwa*	Benoni	16 843	3 295	20 138
Tsakane*	Brakpan	14 473	880	15 353
Wattville*	Benoni	446	410	856
Katlehong*	Germiston	3 308	428	3 736
Vosloorus*	Boksburg	1 067	11	1 078
Zonkezizwe	Heidelburg	4 286	427	4 713
Ebony Park	Kempton Park	0	68	68
Botleng*	Delmas	1 807	45	1 852
Duduzza*	Nigel	6 380	1 659	8 039
Nthorwane*	Balfour	615	0	615
Siyathemba*	Balfour	1 446	855	2 301
Farm Workers	Nigel	108	94	202
Evaton*	Vanderbijlpark	24 063	988	25 051
Orange Farm	Vereeniging	25 216	476	25 692
Sebokeng*	Vanderbijlpark	9 953	659	10 612
Farm Workers	Vereeniging	134	3	137
Boipatong*	Vanderbijlpark	302	10	312
Sharpeville*	Vanderbijlpark	104	23	127
Tshepiso	Vanderbijlpark	2 504	66	2 570
Bekkersdal*	Westonaria	628	416	1 044
Dbn Rdprt Deep	Roodepoort	8 090	90	8 180
Finetown	Westonaria	2 383	177	2 560
Kagiso*	Krugersdorp	6 133	612	6 745
Poortje	Vanderbijlpark	1 591	65	1 656
Farmworkers	Randfontein	69	23	92
Rietvallei	Krugersdorp	2 795	81	2 876
Soweto West	Roodepoort	5 799	178	5 977
Diepsloot	Pretoria	893	99	992
Lanseria	Krugersdorp	47	0	47
Soweto*	Johannesburg	3 365	252	3 617
Kagiso Ext 12*	Krugersdorp	0	944	944
Protea Glen	Roodepoort	0	613	613
Lusaka City	Krugersdorp	0	463	463
TOTAL		***158 575***	***14 571***	***173 146***

This table does not include the connections that existed at the take over. It should be noted that connections refer to a point of supply and not specifically to a household. Eskom project connection figures are believed to be between 90 and 100%.

There is clearly a major drive to electrify what was formerly known as black townships. From the inception of the electrification drive in 1991 there have been 173 146 new connections. According to 1991 Census the total number of households in Gauteng was 1 818 000 and 345 420 (19%) of these are still without electricity. The households without electricity are approximately twice the number of the new connections. The rate at which this backlog can be reduced depends on the local authorities and Eskom. However, within the Eskom licence area the grid is extensive and many households without electricity could be connected if a deposit was paid .

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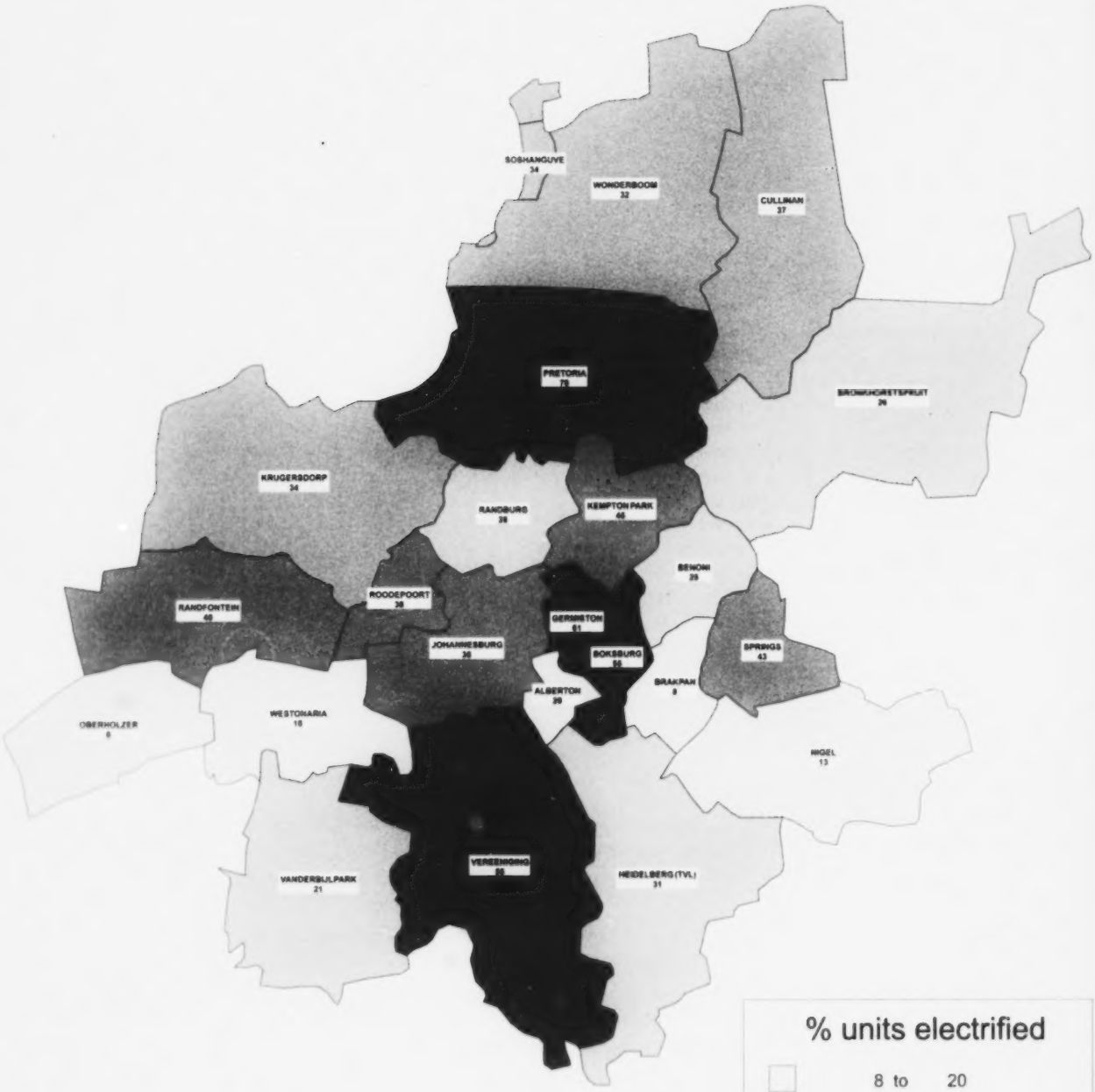
Eskom

MAP 19 : PERCENTAGE INFORMAL HOUSES ELECTRIFIED

Source : NELF Database

HSRC
RGN
GIS UNIT



% units electrified

8 to	20
20 to	31
31 to	37
37 to	45
45 to	70

N

KM

25

Table 19 Percentage informal houses electrified

DISTRICT	TOTAL ELECTRIFIED INFORMAL HOUSES	TOTAL SERVICE POINTS	% ELECTRIFIED HOUSES
Alberton	7 268	36 065	20,2
Benoni	4 784	19 009	25,2
Boksburg	1 894	3 465	54,7
Brakpan	621	7 814	7,9
Bronkhorstspruit	916	3 556	25,8
Cullinan	732	1 953	37,5
Germiston	914	1 488	61,4
Heidelberg (GP)	4 937	15 870	31,1
Johannesburg	22 354	58 670	38,1
Kempton Park	14 742	32 825	44,9
Krugersdorp	2 223	6 512	34,1
Nigel	1 002	7 439	13,5
Oberholzer	1 051	13 326	7,9
Pretoria	9 035	12 829	70,4
Randburg	4 113	14 904	27,6
Randfontein	1 647	4 123	39,9
Roodepoort	1 984	5 169	38,4
Soshanguve	3 002	8 809	34,0
Springs	2 152	4 989	43,1
Vanderbijlpark	5 979	28 770	20,8
Vereeniging	24 049	44 001	54,7
Westonaria	2 106	11 620	18,1
Wonderboom	2 846	8 791	32,4

7.6 Roads

Introduction

"Like so much else in our country South Africa's road infrastructure is an amalgam of both first world and third world standards. The national and main road structures have played a very significant part in economic development of the country over the last 40 years and are destined to play an even more important part in the future. At the same time there are large sectors of the rural community that are inadequately served by roads. This is a situation which must be addressed as a matter of urgency if we are to achieve the planned levels of social and economic development" (A Future for Roads in South Africa, 1996:1).

South Africa's roads carry between 80 and 90% of all passenger and freight movements in the country. Despite their critical function there is a serious lack of funds for their maintenance and development.

The role of roads in development

"A good road (transport) system has been identified as the second most important catalyst in a country's social and economic development (after education). A former Administrator of the USA Federal Highway Administration stated: 'It was not our wealth which made our good roads possible, but rather our good roads which made our wealth possible.' This is an important message for South Africa which underlines the need for urgent and determined actions to be taken to preserve, and, where necessary, improve our road network in the interests of social and economic development in South Africa" (A Future for Roads in South Africa, 1996:3).

Transport, especially road transport, is central to development for without physical access to jobs, health, education and other amenities, quality of life suffers. Without physical access to resources and markets, growth stagnates and poverty reduction cannot be sustained.

"An adequate road system plays a major role in the economic and societal health of a country. Therefore, such a road system should receive an appropriate and stable level of investment in order to establish and maintain the system. Also it should be effectively and efficiently managed to obtain the maximum return on scarce financial and physical resources" (A Future for Roads in South Africa, 1996:3).

Road network classification

"Roads and streets constitute the necessary communication links which provide adequate support for economic growth and which must satisfy the basic accessibility needs, i.e. the ability to be reached, and conversely, the basic mobility needs i.e. the ability to move, or be moved, easily, quickly and efficiently, of the population" (A Future for Roads in South Africa, 1996:7).

It is important to determine a suitable and encompassing classification for roads. Such an approach must be followed whereby roads are classified by recognising the

authorities primarily responsible for their provision as well as the functionality of the different elements of the total network.

The classification is as follows:

- **National roads**

"The authority primarily responsible is the South African Roads Board. These roads provide mobility in a national context. Traffic on these roads is usually associated with longer travel distances and the design of the roads should make provision for relatively high speeds, and interference with through traffic should be minimised. These roads are provided primarily for economic reasons. They are regarded as strategic economic assets vital to the ability of the country to support and improve economic growth through industrial development and exports" (A Future for Roads in South Africa, 1996:7).

- **Provincial roads**

"The authorities primarily responsible are the provincial Departments of Transport and in some cases Public Works. Provincial roads are primarily provided for access and mobility in a regional context. These roads are designed for shorter travel distance and moderate speeds. Such roads usually form the links between towns not situated on the national road network" (A Future for Roads in South Africa, 1996:7).

- **Urban roads**

The authorities primarily responsible are city or local authorities. Urban roads are provided for mobility in urban areas.

"Although the provision of urban streets and roads is generally financed through local rates and taxes, the national and provincial road authorities do accept responsibility for certain national and provincial roads in urban and metropolitan areas to ensure route continuity. The Johannesburg outer ring road is such an example" (A Future for Roads in South Africa, 1996:9).

Classifying roads according to road user needs

"Roads satisfy various needs of the road user such as, for example, enhanced mobility. This they will do to a greater or lesser extent depending on their level of serviceability, which provides benefits of comfort, convenience, speed, safety and economy of travel. Many of the maintenance and upgrading activities performed within the roads budget are aimed at increasing serviceability. By far the greater part of the benefits that they produce will accrue exclusively to the road-using public. Accordingly, it must be questioned whether the general taxpaying public should be required to pay for such improvements from the State Revenue Fund" (A Future for Roads in South Africa, 1996:22).

Other needs, *inter alia* include, firstly, that like other forms of government activity in a market-oriented mixed economy such as South Africa's, roads must be economically efficient. This requires that the scarce resources available for roads

must be allocated to satisfy the greatest demands. This requires road provision to be sensitive to market signals.

"Road provision must also be equitable. There are a number of facets to this requirement. It may be more expensive to build and maintain roads under particular climatic or topographical conditions than others, so that regions exhibiting difficult conditions may warrant subsidisation by others more fortunately placed. Economically disadvantaged regions of the country may need to receive special development efforts. Furthermore, a balance must be maintained between the provision of roads and the supply of public transport. This is so that the disadvantages experienced by social groups without regular access to private motor vehicles are not exacerbated" (A Future for Roads in South Africa, 1996:22).

Finally, road provision must satisfy certain strategic requirements, for example, access to certain development regions must be secured, and the quality of life in rural areas improved in order to prevent their depopulation.

There is a trade off between these goals and different groups within society at large may be held responsible for providing the funds needed for their satisfaction.

"In particular, the user pays approach to funding is appropriate to the goals of economic efficiency and increased serviceability required by the higher order roads, such as the national road network. By contrast, the goal of equity and provision of basic access implies that some users at least are not able to pay. Funding out of general tax revenue is thus required to satisfy this goal, as well as that of meeting strategic objectives where the road using public is not the beneficiary. Finally, user charging might need to be combined with subsidisation out of general revenue in order to satisfy the goal of environmental compatibility" (A Future for Roads in South Africa, 1996:22).

Road funding is a heterogeneous activity. Different road maintenance and improvement activities will satisfy different needs, and only in some cases will significant advantages accrue to the public at large. In other cases, benefits are experienced exclusively by road users, and can and should be "sold" to them like any other commodity.

Policy implications

The road network in South Africa faces a crisis. For many years now financial allocations from the Exchequer have been inadequate to meet the recurring needs of necessary maintenance, let alone provide much-needed rehabilitation, improvement and expansion of the network to cater for the rapidly growing demands on the network.

"The main provisions to address the undesirable situation in respect of the road network are institutional and financial. They relate to the institutional framework within which the national road network is managed; an inadequate flow of funds; inadequate conditions of employment to attract sufficient numbers of experienced road engineers and technicians; lack of clearly defined responsibilities; inadequate

management systems; and a lack of managerial authority and accountability. Roads are managed like a bureaucracy, not a business. Managers simply do not have the funds or incentives to use resources efficiently - nor are they penalised for poor performance" (A Future for Roads in South Africa, 1996:33).

Solving these problems requires fundamental changes in the way governments manage, and especially finance their networks, particularly the national networks that are provided primarily for economic reasons.

"The key concept for this level of roads which is emerging in many countries throughout the world is commercialisation, that is bringing the higher order roads into the market place, putting them on a fee-for-service basis and managing them like any other business enterprise. However since roads are a public monopoly, and likely to remain in government hands, commercialisation requires complementary reforms in other areas" (A Future for Roads in South Africa, 1996:33).

Such reforms include

- involving the road user in the management of roads to win public support for more road funding, to control potential monopoly power and to constrain road funding to what is affordable;
- establishing a clear organisational structure to place the delivery of the national road programme outside the hands of the bureaucracy;
- securing an adequate and stable flow of funds and introducing secure arrangements to channel these funds to the road agency, and
- strengthening the management of roads by providing effective systems and procedures and strengthening managerial accountability.

"There is a strong case for the re-introduction of a dedicated fund for the national road system. The income to the fund needs to be generated by a levy on fuel and also loan funds, redeemed by road tolls. For the provincial and urban roads, where a significant increase in funding levels is also urgent, it appears appropriate that the financial sources should comprise vehicle licences (greatly increased in magnitude) and annual appropriations from the Exchequer" (A Future for Roads in South Africa, 1996:33).

7.6.1 Access to road infrastructure

Before trying to provide a commentary, it may be of value to digress and describe the unique position of the Gauteng province in South Africa. As the economic powerhouse of the country, in round figures responsible for 40% of the GDP, it is virtually a large metropolis. As such the province comprises five metropolitan areas and two services council areas, with large tracts of the services council areas being urbanised. Population densities and levels of services vary greatly, not only between areas but even within magisterial districts. Roads in the province comprise national, provincial, metropolitan and local authority roads and streets. For instance, Bronkhorstspruit with a length of 0.43 km² of road appears better served by road infrastructure than sections of Johannesburg. Gauteng also has great transport needs that are difficult to relate to road length per unit of land area.

The need for transport infrastructure and maintenance in Gauteng have to be assessed on a more sophisticated plane. In this regard, the Gauteng Department of Public Transport and Roads (for short, Gautrans) has developed various tools and strategies, and has conducted investigations to promote the effective and efficient execution of functions and the meeting of RDP objectives.

An adequate transport system is viewed as an essential prerequisite for economic well being. Nowhere is this more evident than in Gauteng where economic growth, instead of being led by investment in transport infrastructure, is being stifled by the lack of it. Over the past five to ten years a tremendous backlog in infrastructure provision developed owing to inadequate financing. This is not restricted to, but is particularly noticeable on routes serving lower income group areas. Roads in Gauteng, serving approximately 65% of all public transport trips in the province, are a basic need and the backbone not only of Gauteng's infrastructure, but of South Africa's as a whole. Without adequate roads, accessibility and the efficient transport of goods and services become a nightmare, hindering the provision of all essential services. The old axiom of paying for good roads, whether one has them or not is valid in this situation.

In Gauteng the road network is fairly well developed in terms of distance per square kilometre of land compared with the other provinces. Gauteng is, however, distinguished by its high degree of urbanisation and metropolitanism. With few exceptions, communities generally do not have far to travel to reach a section of the major road network. Nevertheless, long commuting distances do still exist, but this aspect is being addressed. The problem facing Gauteng is rather that of adequate capacity as numerous sections of the network are oversaturated which is counterproductive and impacts negatively on the country's economy. The streets in former black areas vary from good to poor, for example, Daveyton's streets (near Benoni) have been upgraded and repaired and are in good condition, while Ratanda's streets (Heidelberg) are in a fair to poor condition, mainly through a lack of maintenance. In Soweto the condition of streets varies from very good to very poor, but a concerted effort is being made to rectify matters, pending the availability of funds.

Physical accessibility to urban areas is generally adequate to good, but insufficient capacity is a serious problem, with congestion being a daily occurrence. In terms of time this makes accessibility poor. Other aspects that impede are violence in the minibus industry and/or the hijacking of vehicles. Violence in the minibus industry is receiving Gautrans' undivided attention and good progress is being made.

It is not possible to rank districts on a worst-off or most disadvantaged scale as this is a relative concept and difficult to define. Generally, however, these are low income group areas where streets have not yet been surfaced or rural areas which have gravel roads, the condition of which varies from fair to poor, chiefly as a result of the quality of the gravel material and the volume (and type) of traffic. Lack of adequate funding is probably the biggest disadvantage to addressing the various problems.

Gautrans and the metropolitan and local authorities have developed various guidelines and criteria. Traffic volumes, capacity, public transport, construction, materials, financial resources, accident black spots and technical standards are some of the major

aspects that are considered in the setting of minimum requirements for provincial roads.

Violence and hijacking still appear to be major problems and statistically higher incidences occur in the metropolitan areas.

Probably the matter most easily overlooked when considering the relevant issues in meeting the service needs of the people in the province is that of human resources. The loss of experienced and expert staff from the public service, and the need for in-service training of new incumbents are certainly cause for alarm. The remaining officials are faced with a mammoth task that hinders the progress of production and delivery. Inadequate funding, as cited above is another important aspect that needs urgent attention. Urban sprawl does not make providing public transport easy and, although much effort is being put into promoting public transport, it will be many years before this philosophy will be easily, economically, effectively and efficiently implemented. Concepts such as corridor development, mixed land use, shortened work-home trips, compact cities, etc. could all play a role in alleviating current transport problems and pro-active work in these fields is being undertaken at present.

To conclude, it should be noted that over the years many authorities have striven to develop efficient and effective databases. Some have succeeded, but many have taken more effort and time and cost more than originally envisaged. In Gauteng there are a number of databases giving different sets of info and serving the efforts of giving different sets of information and serving different needs. At present Gautrans is co-ordinating the metropolitan authorities and services councils (as well as the substructures, local councils, etc.) at official forums to develop various communal systems or databases.

Two significant such developments are described below:

- Transport Co-ordinating Committee (TCC): A group has been formed with members of Gautrans and the metropolitan/services councils and local authorities to establish and maintain an effective forum for officials to conduct discussions, give advice, enhance co-ordination, ensure consultation with technical role-players and to disseminate information on matters pertaining to the strategic development of the province.

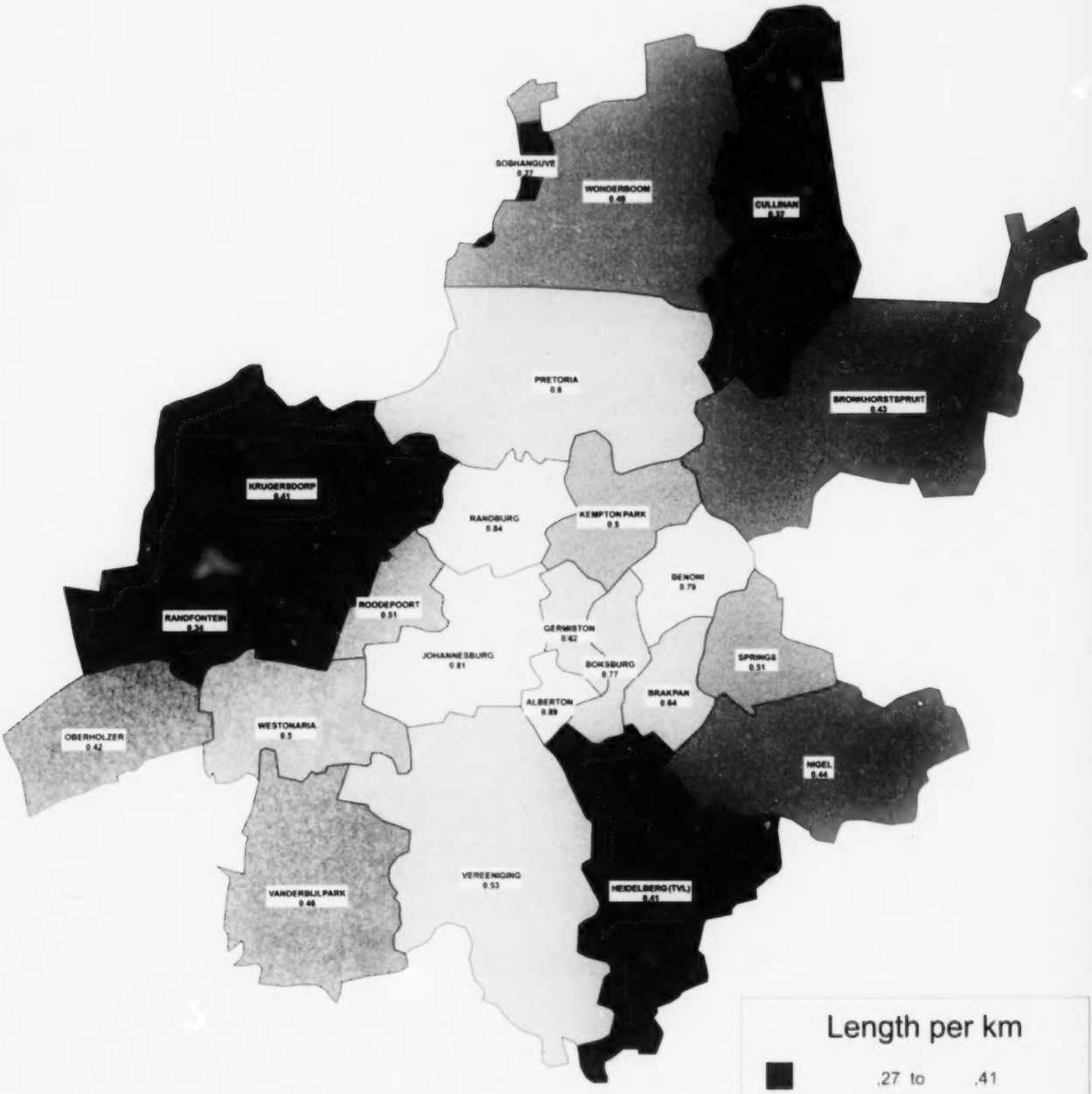
- Provincial Transport Plan: Every metropolitan/services council is responsible for compiling its transport plans (which include policies, road information, implementation projects, planning projects, major road plans, etc.) which must be submitted to Gautrans. Gautrans must then collate and collect the information and compile a Provincial Transport Plan. This will cover many aspects of roads and transport in Gauteng and will be aligned to other transport plans so that a holistic picture of transport in the province will emerge thus enabling all role-players to make more effective decisions within a co-ordinated framework.

S.L. Burnett
Public Transport and Roads

MAP 20 : LENGTH OF ROADS PER SQUARE KILOMETRE

Source : Surveyor General

HSRC
RGN
GIS UNIT



Length per km

,27 to	,41
,41 to	,49
,49 to	,51
,51 to	,77
,77 to	,89

N

KM

25

Table 20 Length of roads per square kilometre

DISTRICT	AREA (KM²)	LENGTH OF MAJOR ROADS	LENGTH PER KM²
Alberton	109	97	0,89
Benoni	299	236	0,79
Boksburg	201	155	0,77
Brakpan	226	145	0,64
Bronkhorstspruit	1 685	729	0,43
Cullinan	1 245	456	0,37
Germiston	163	102	0,62
Heidelberg (GP)	1 172	479	0,41
Johannesburg	595	482	0,81
Kempton Park	405	202	0,50
Krugersdorp	1 333	553	0,41
Nigel	921	402	0,44
Oberholzer	555	234	0,42
Pretoria	1 375	820	0,60
Randburg	387	325	0,84
Randfontein	807	272	0,34
Roodepoort	227	116	0,51
Soshanguve	65	18	0,27
Springs	334	170	0,51
Vanderbijlpark	923	429	0,46
Vereeniging	1 587	848	0,53
Westonaria	582	293	0,50
Wonderboom	1 352	662	0,49

7.7 Telecommunications

Introduction

The first section dealing with the government's vision, the RDP, economic growth and empowerment and economic empowerment of historically disadvantaged South Africans has been abridged from the second draft of the White Paper on Telecommunications Policy, 1996. The second section, which is an analysis of residential line provision in Gauteng was conducted by the HSRC.

The state's vision for the telecommunications sector

The state recognises the central importance of access to telecommunications to the achievement of its economic and social goals. Affordable communications for all, citizens and business alike, throughout South Africa, is at the core of its vision and is the goal of its policy.

The challenge is to articulate a vision that balances the provision of a basic universal service to disadvantaged rural and urban communities with the delivery of high-level services capable of meeting the needs of a growing South African economy.

The vision must therefore reconcile these two seeming opposites within an integrating framework that also allows for a dynamic definition of universal service and facilitates the co-ordination of all available infrastructure in support of its goal.

The RDP

"The telecommunications sector is key to the success of the RDP. Access to communications facilities is not only necessary for the delivery of services in critical sectors such as education and health; it also serves to stimulate the creation of small business and offers a channel of communication to reinforce participation in democratic processes at community, provincial and national levels. It is the essential backbone for development and offers the only opportunity for leapfrogging its relatively slow sequential phases" (White Paper, 1996:17).

Economic growth and empowerment

The telecommunications sector is both a source of economic growth and an enabler of growth in other sectors.

As a source of economic growth the sector itself offers opportunities for locally developed innovative products and services which, with appropriate transfers of skills and technologies, can contribute significantly to economic empowerment of previously disadvantaged communities. The sector can make an important contribution to export growth and import substitution.

As an enabler of growth the sector forms part of the basic infrastructure needed to stimulate economic activity including the creation and development of business in all sectors and therefore the growth of the economy as a whole. An integrated high-quality network providing value-added services and access to the international

information highway is required to support the needs of South Africa's internationally competitive industries and link its economy into the global system. Improved communication with the African region will reinforce South Africa's presence by facilitating exchanges among institutions in the public and private sectors and by providing opportunities for technology exports.

Because of the fundamental importance of the telecommunications sector to national economic growth and development, planning for the sector should be closely integrated into broad economic, trade and social planning and effectively linked with other information policy initiatives.

Economic empowerment of historically disadvantaged South Africans

"Political empowerment of the majority through democratic processes underway in the country must be accompanied by economic empowerment in order to achieve the national goal of sustainable social and economic development. The creation of meaningful jobs, wealth and a decent standard of living for the population will give meaning to their right to vote. Thus, political power cannot bring stability and growth without addressing the issue of historical disparities within the economic power. Besides referring to those who were disadvantaged by the apartheid system in the past, the term "disadvantaged" also applies to those South Africans who have been historically disadvantaged through discrimination on the grounds of gender and/or disability. In the context of telecommunications the severe disadvantage experienced by members of rural communities under apartheid should receive special attention" (White Paper, 1996:40).

"Economic empowerment of historically disadvantaged communities is a deliberate programme of achieving meaningful participation by all members of these communities in all aspects of productive economic activities in South Africa as consumers, workers, managers and owners. Achievement of sustainable economic empowerment for historically disadvantaged communities will require a deliberate long-term phased programme utilising a wide spectrum of approaches. These will include the extension of telecommunications services to all; broadening the equity ownership of current and future enterprises (subject to the state assets debate); creating opportunities for meaningful employment and management; and the effective promotion of entrepreneurship. The effectiveness of any of these aspects and the success of the overall programme of economic empowerment will be rooted in the principle of a broad-based and non-discriminatory involvement of all communities in the economic development of South Africa. Human resource development within the telecommunications sector also needs to be seen as a form of economic empowerment to enable disadvantaged South Africans to participate in the industry effectively" (White Paper, 1996:40).

7.7.1 Residential line shares

The data relating to Gauteng were analysed in terms of residential line supply only. During the time of writing Telkom was sensitive about the public release of actual numbers of residential lines per magisterial district. This was due to uncertainty regarding the future restructuring of Telkom and the possible utilisation of data by competitors. The 1996 Census will however place this data in the public domain.

To accommodate Telkom's sensitivities residential line data were transformed to indicate the priority of the various districts. Very high priority districts are those districts that are currently well below the provincial average. The other priority ranges are high, medium, low and very low. The very low priority districts have a residential line penetration that is much greater than the provincial average.

The southern portion of Gauteng, including the districts of Oberholzer, Westonaria, Vanderbijlpark, Heidelberg, Alberton and Nigel, is in the high or very high priority range. The central eastern section has two adjacent high priority areas, Kempton Park and Benoni. Soshanguve, in the north-west part of Gauteng, is also a high priority area.

The low and very low priority areas, except for Springs, form a contiguous block including Johannesburg, Germiston, Boksburg, Roodepoort, Krugersdorp, Randburg, Pretoria and Wonderboom.

If the telecommunications sector is to be a growth sector in itself and a means by which other sectors can develop, then a long-term strategy to concomitantly supply universal access to historically disadvantaged rural and urban communities and also to form part of infrastructure vital to a developing economy is required. Telkom's Vision 2000 strategy hopes to increase the number of subscribers by 2-3 million. This will only be possible if a strategic equity partner (SEP) is found for Telkom. This will allow the rate at which new services are provided to treble. The South African government is Telkom's main shareholder and will have overseen the appointment of a SEP perhaps by March 1997.

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GIS Unit
Human Sciences Research Council

MAP 21 : TELECOMMUNICATIONS PRIORITIES

Source : Telkom 1995

HSRC
RGN
GIS UNIT

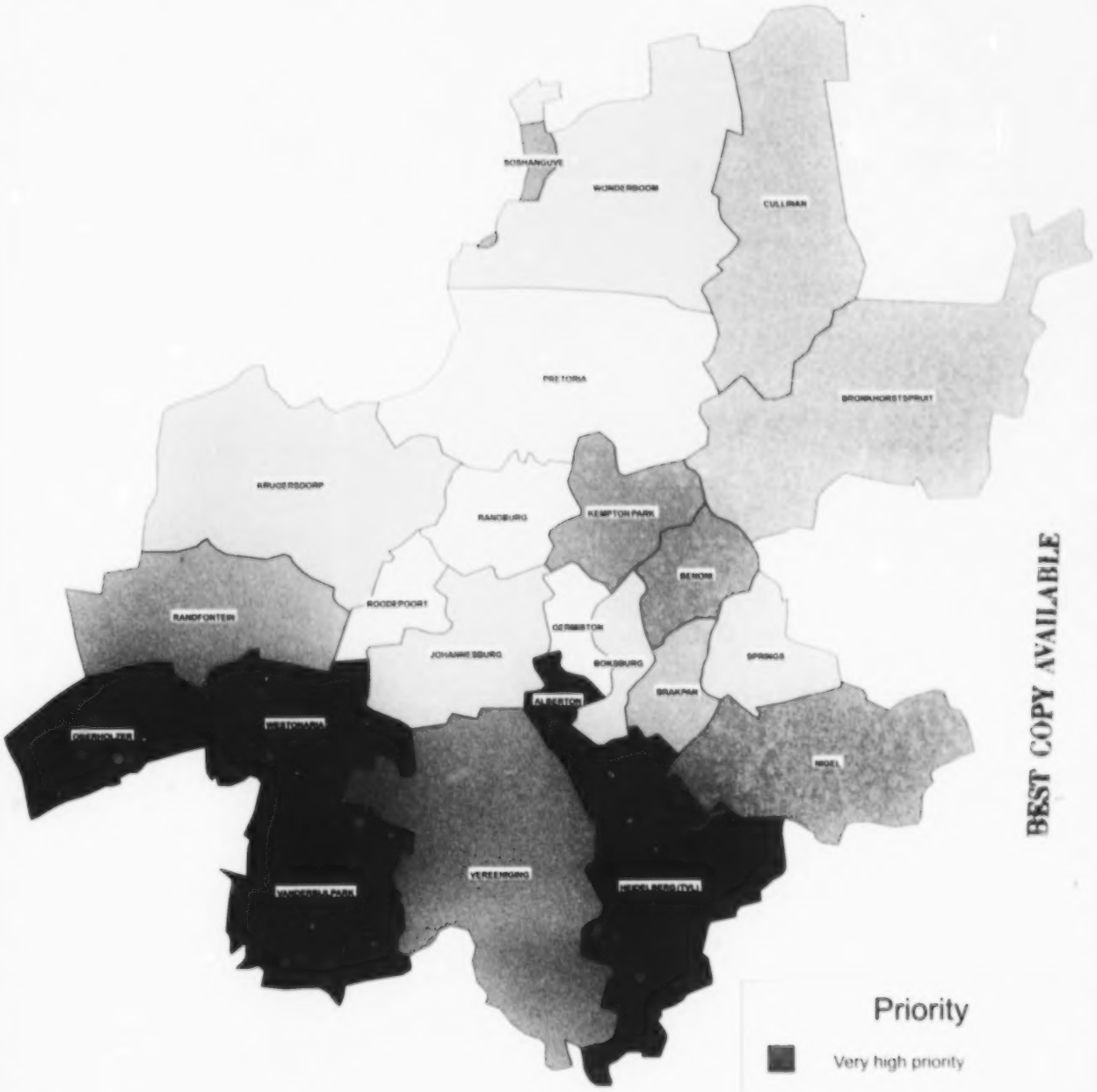

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Table 21 Telecommunications priorities

DISTRICT	PRIORITY	RANK
Westonaria	Very high	1
Heidelberg (GP)	Very high	2
Oberholzer	Very high	3
Vanderbijlpark	Very high	4
Alberton	Very high	5
Soshanguve	High	6
Vereeniging	High	7
Nigel	High	8
Kempton Park	High	9
Benoni	High	10
Cullinan	Medium	11
Brakpan	Medium	12
Randfontein	Medium	13
Bronkhorstspruit	Medium	14
Boksburg	Low	15
Krugersdorp	Low	16
Springs	Low	17
Johannesburg	Low	18
Wonderboom	Low	19
Pretoria	Very low	20
Randburg	Very low	21
Germiston	Very low	22
Roodepoort	Very low	23

7.8 Postal services

"The South African Post Office is an independent public company, fully complying with the regulations laid down in the Companies Act. The State is the sole shareholder. Parliamentary control has been replaced by a Board of Directors, consisting of respected business and community leaders from outside the company, and a Management Board, headed by a Managing Director. The Post Office aims at profit-making. Financial accounts and statements are compiled in terms of the Companies Act. Taxes are paid on any profits and the current shortfall is subsidised by the State" (SA Post Office:4).

The main activities

"The Post Office is responsible for the handling and delivery of an average of 7,7 million mail items each working day, counter services at more than 1 600 post offices countrywide and the Post Office Savings Bank, now known as the Postbank" (SA Post Office:4).

The Post Office also acts as an agent for a number of private and public organisations such as Telkom SA for the collection of telephone account payments and the SABC for the collection of television licence fees. Similarly, the paying of pensions; the selling of scratch cards, and the collecting of water and electricity account payments for certain municipalities, as well as the selling of revenue stamps are handled by the Post Office (SA Post Office).

Reshaping the postal services

In 1993, the Post Office embarked on a programme to streamline the postal business to ensure a quicker, more effective service that put clients first. This entailed the following:

- **Placing basic postal services within easy reach**

Since May 1993, postage stamps have been available at certain local bookshops, supermarkets, chemists, cafe's, spaza shops and filling stations. One-stop shopping was introduced by selling postage-paid envelopes, easy-to-use packaging and other articles needed to facilitate the mail service for clients. A larger variety of such services and products were introduced with the opening of postal shops in 1994/95. A single-queue system was introduced at most of the major post offices to enable clients to do all their postal business, including banking business, at the same counter (SA Post Office).

- **Creating an infrastructure to suit the entire community**

It is Post Office policy to take the post office to the clients. For this reason, more post offices will be opened in shopping centres and inside existing host undertakings. This will make it easier for clients to do their postal business together with other business, even during extended office hours. The first retail postal agencies were to be introduced in 1994/95 (SA Post Office).

- **Giving each person a postal address**

"A massive three million additional post boxes, mainly as transportable mail

collection units or post box lobbies, are to be placed all over South Africa within the next five years to enable each household to receive mail. The focus will be on underdeveloped areas where no postal delivery service exists. This entails clients' collecting their own mail at post box lobbies placed at convenient places after negotiation with communities. The other mail delivery options available include private post boxes, fixed poste restante (transportable post box lobbies) and street delivery" (SA Post Office).

- **Delivering mail according to set standards**

In April 1993, the Post Office introduced set mail delivery times. This entails delivery within two days in the same town or city, four days between towns and cities in the same province and between major centres in different provinces and five days to more remote places for inland standard economy mail. An additional day should be allowed for non-standardised and insured/registered or COD items. The day on which the letter is posted should not be taken into account. The Post Office's performance is measured against these set standards by external auditors and the Post Office is held publicly accountable to its clients (SA Post Office).

- **Creating a computer network to facilitate counter services**

In 1994 the Post Office started to expand its computer network to link 5 000 counter service points countrywide. The system, known as Excellpos, will reduce paperwork to a minimum, expedite service at the counter and cut the waiting time in queues considerably (SA Post Office).

Inland mail service

Three mail services are available: Economy mail, Fastmail and Speed Services.

Economy mail

Economy mail is the ordinary mail service in South Africa. The new standard postage stamp without face value may be used on all inland standard letters. Should it be used on non-standard items and overseas mail, additional postage stamps must be affixed (SA Post Office)

Fastmail

Fastmail undertakes to deliver items at least one day earlier than Economy mail in terms of the set delivery times. Fastmail comprises any standardised or non-standardised letter to a maximum of two kilograms, which must be handed in at a post office counter. Clients may use the Fastmail envelopes on sale at post offices or use their own envelopes. Stickers have been specially designed to ensure the item receives priority treatment throughout the mail handling process (SA Post Office).

Speed services

An extension of the priority mail service, Speed Services provide the following options to get urgent mail items to their destinations in the shortest possible time:

- Same-day delivery
- Overnight delivery
- International speed delivery

To make it even more convenient, clients may choose from

- counter-to-counter delivery,
- counter-to-door delivery,
- door-to-counter delivery,
- door-to-door delivery.

Speed Services guarantees delivery times and will compensate losses. Speed Services is also able to trace mail items at any given time (SA Post Office).

7.8.1 Access to postal services

Provision of postal services in the Witwatersrand region

Provision of post boxes

During May 1996 the Post Office in Gauteng started on a project by providing an address to each household by means of cluster boxes in the following areas: Orange Farm, Drieziek, Protea Glen, Lusaka, Blue Gumview, Stredfort, Beverly Hills, Kagiso and Ivory Park.

To date 95 000 additional addresses have been provided in these areas. Furthermore, these boxes were issued totally free of charge to the community.

Postal agencies / postpoints

The Gauteng province is very compact and therefore the Post Office has chosen rather to establish postpoints (retail post offices) then retail postal agencies. Furthermore, its main priority is to replace the smaller post offices with postpoints that render a much more customer friendly service with extended business hours. Unfortunately most of the new shopping centre developments in this region are close to the entrances of townships, which makes it extremely difficult for the Post Office to provide centralised services.

Future plans

In the Witwatersrand region the Post Office planned to open postshops in the bigger post offices with effect from January 1997. These shops are small stationery shops inside post offices. They also offer photocopying and fax services.

The faxmail service, where clients can send and receive faxes from post office branches (even those without postshops), is being enlarged from time to time.

Provision of postal services in the northern region

The following comments concern the provision of postal facilities and services in the Gauteng province with special focus to the Pretoria, Wonderboom, Soshanguve and Cullinan magisterial districts:

South African Post Office policy guidelines concerning the provision of postal facilities and services to meet community requirements

The South African Post Office (SAPOS) has clearly articulated policy guidelines outlining the aims and objectives of the company. Consideration of such policy guidelines shows that SAPOS supports the national Reconstruction and Development Programme by providing the necessary postal facilities and rendering a quality postal service to all the communities of the Gauteng province. Such postal facilities and services consist of a variety of infrastructure and services, namely

- post offices
- retail post offices
- retail postal agencies
- mail collection points
- lobby boxes
- delivery service.

The availability of such infrastructure and services, and its subsequent distribution to the community will however, be subject to the following principles: identification of needs; availability of funds and constant consultation and agreement between the stakeholders, namely the SAPOS, government, labour and civic organisations.

Key factors militating against the South African Post Office meeting future service needs in the Gauteng province

The rapid industrialisation of the Gauteng province creates a variety of social trends and patterns, *inter alia*, a massive exodus of people from rural areas to major cities of the province in search of job opportunities and a better life.

The effect of this social mobility to the Greater Pretoria area and the surrounding townships of Soshanguve, Mamelodi, and Atteridgeville/Saulsville is mass urbanisation, resulting in squatting or informal settlements, overcrowding and population explosion. These social trends and patterns have a significant, negative impact on scarce resources such as land and funds, and ultimately result in the poor provision of postal facilities and services in these areas. This raises a number of questions: can SAPOS, with its current financial position, manage to provide the fast-growing informal settlements in Gauteng with quality postal facilities and services in a reasonable time span? Do informal settlement communities have established infrastructure like tarred roads, streets, house numbers, and so on? Are land and suitable premises available in the informal settlements for establishing a postal infrastructure?

Unfortunately, the answers to these questions are in the negative. The SAPOS currently operates with a deficit and cannot, within a relatively short period, provide disadvantaged communities such as informal settlements in Gauteng with quality postal facilities. Long-term planning based on a piecemeal developmental approach of postal facilities for such communities is required. The problem with such an approach is that the government presently subsidises SAPOS to enable it to execute its operational function only, and not to build assets.

The acquisition of land and suitable premises is problematic for SAPOS. In Gauteng for instance, large portions of land are privately owned. Therefore, acquiring land or premises for postal infrastructure is a difficult, slow and costly exercise. To date, a tender was submitted by SAPOS (in 1995) to buy land from the City Council of Pretoria to build a post office in Saulsville has received no response, nor have attempts made to acquire land from the same City Council to erect post box lobbies in Mamelodi met with any success. Often, where land belongs to the local authorities, its acquisition by SAPOS becomes increasingly difficult (if not impossible) as the municipalities seem to be undecided in prioritising development. The leasing of suitable premises is also very expensive.

Furthermore, the socio-economic status of most of the inhabitants of the black townships in Pretoria is relatively low. Most particularly the inhabitants of the informal settlements, cannot afford to pay the R15,00 key deposit for a post box, therefore in Soshanguve alone, the Post Office has about 22 post box lobby units underutilised, having cost SAPOS approximately R70,000 to buy a single post box lobby unit. SAPOS's whole financial structure would be severely affected if it were to establish a postal infrastructure in areas where it would be underutilised or not used at all because of the low socio-economic status of the inhabitants. Since the Post Office already operates with a deficit, there is no source for such funding.

The socio-economic status of the people of Gauteng will determine who will benefit from the existing postal facilities. Unless the government intervenes with a programme to correct the present socio-economic imbalances, postal services will continue to be unequally distributed.

Imbalances in the distribution of postal facilities and services, and the approach of the South African Post Office to this problem

It is an incontrovertible fact that the previous government's policy of separate development was primarily responsible for the unequal distribution of resources including postal facilities and services. The then PWV area (now Gauteng province) was not exempted from the effects of this policy.

Historically, the homeland policy (based on the Promotion of Black Self-Government Act of 1959) which separated the South African blacks from the mainstream socio-economic development and the Black Local Authority Act of 1982 were among the powerful instruments of separate development. While the Black Local Authority Act of 1982 pretended to empower the so-called urban blacks socially and economically, it, in fact, relegated blacks, for example in the Pretoria townships of Mamelodi, Soshanguve and Atteridgeville or Saulsville, to socio-economic underdevelopment. Therefore there is one post office in Soshanguve for a population of approximately 437 000; two conventional post offices (built of asbestos) in Mamelodi with the population of approximately 333 000, and two post offices in Atteridgeville / Saulsville with a population of approximately 211 000. In Pretoria, in the former so-called white areas, there are currently no fewer than 45 post offices serving the population of approximately 551 192.

SAPOS is committed to addressing these imbalances in the distribution of postal facilities in the province, within the framework of the national Reconstruction and Development Programme.

SAPOS is planning to establish six new post offices in Mamelodi, Soshanguve, Atteridgeville/Saulsville and Laudium by 1999 and to increase the number of retail postal agencies by eight and the retail post offices by ten. SAPOS also intends to increase the number of mail collection points by 5% each year and number of lobby boxes by 30% each year, so that by the year 2000 all the residents of Greater Pretoria will have addresses. It is also planning to have reduced the number of post offices in the former white areas of Pretoria in 1999 so that financial resources can be diverted to the disadvantaged areas.

Special problem areas to be addressed in the provision of postal facilities in Gauteng

In order for SAPOS to meet future service demands in Gauteng, particularly in the areas mentioned, the following will have to occur:

- The socio-economic status of the disadvantaged communities will have to be improved so that the available postal infrastructure and services can be offered and utilised optimally.

- The government will have to assist SAPOS to acquire land to establish postal infrastructure where needed.

- To reduce the inflated demand for postal services in the Gauteng province, the government will have to curb the inflow of job seekers from rural areas to the cities of this province by introducing development programmes which will create jobs in the rural areas.

- To eradicate the imbalances in the distribution of postal facilities, businesses other than SAPOS, who rely wholly on postal infrastructure, will have to give financial assistance as well provide infrastructure. This, in turn, will maximise their profits. The postpoint concept is a good example.

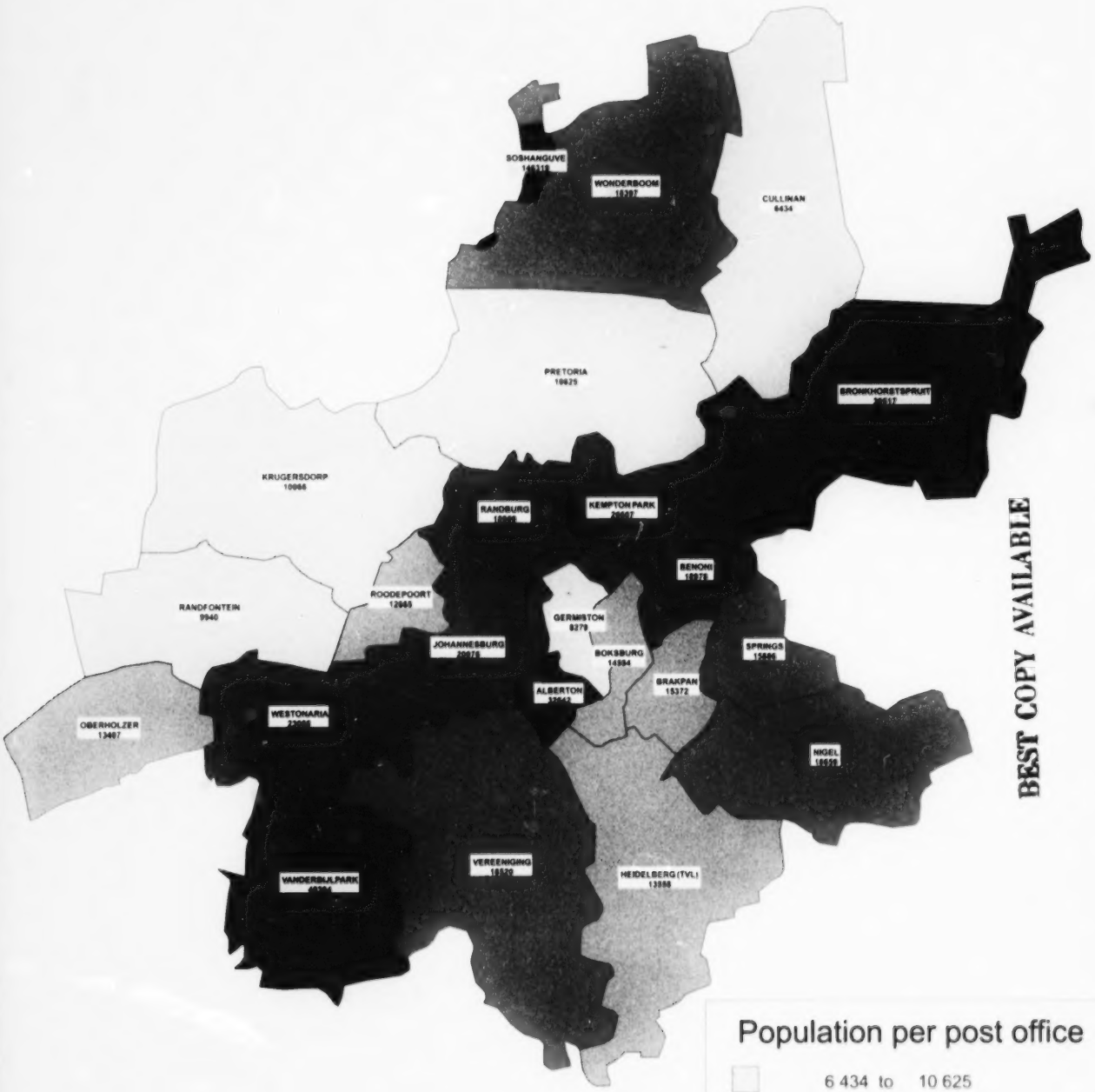
- To support SAPOS RDP liaison officers will have to continue their tireless efforts to maintain a sound relationship between the communities and SAPOS.

A. Smith
South African Post Office

MAP 22 : POPULATION PER POST OFFICE AND POSTAL AGENCY

Source : Post Office Sales and Marketing

HSRC
RGN
GIS UNIT



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Population per post office

6 434 to	10 625
10 625 to	15 372
15 372 to	18 659
18 659 to	26 607
26 607 to	146 319

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KM

25

Table 22 Population per post office and postal agency

DISTRICT	TOTAL POPULATION	POSTAL OFFICES AND POSTAL AGENCIES	POP. PER POSTAL FACILITY
Alberton	391 703	12	32 642
Benoni	303 647	16	18 978
Boksburg	204 176	14	14 584
Brakpan	138 349	9	15 372
Bronkhorstspruit	39 517	1	39 517
Cullinan	32 170	5	6 434
Germiston	173 856	21	8 279
Heidelberg (GP)	108 462	8	13 558
Johannesburg	1 586 040	79	20 076
Kempton Park	372 504	14	26 607
Krugersdorp	191 255	19	10 066
Nigel	93 296	5	18 659
Oberholzer	187 693	14	13 407
Pretoria	690 645	65	10 625
Randburg	359 275	19	18 909
Randfontein	109 336	11	9 940
Roodepoort	227 968	18	12 665
Soshanguve	146 319	1	146 319
Springs	158 861	10	15 886
Vanderbijlpark	444 336	11	40 394
Vereeniging	351 888	19	18 520
Westonaria	184 707	8	23 088
Wonderboom	275 952	15	18 397

7.9 Police services

General overview

Policing in South Africa has traditionally not developed as a service aimed at meeting the needs and aspirations of our diverse communities. Policing was rather the appropriation and domination by particular governments to enforce specific political ideologies that were inconsistent with the democratic and popular aspirations and demands of the majority of people in South Africa.

The April 1994 elections ushered in a democracy that completely redefined the political and social context within which policing in South Africa is to function. "The advent of democracy demands a fundamental reassessment and transformation of the nature and style of policing. The Constitution prescribes the establishment of a national Police Service that is to be representative, legitimate, impartial, transparent and accountable - one which upholds and protects the fundamental rights of all people and carries out its mission in consultation, co-operation and in accordance with the needs of the community" (SAPS: Website).

Transformation of the South African Police Service

The transformation process of the South African Police Service is aimed at "meeting the requirements of the Constitution, the policies of the Government of National Unity and the very urgent need for the creation of a safe and secure environment for all citizens in our country that is conducive to development and quality of life. Indeed the prevailing climate of change in South Africa presents a golden opportunity to address a range of issues relevant to democratic policing" (SAPS: Website).

The Reconstruction and Development Programme and the South African Police Service

There are five interlinking or interdependent programmes to support the transformation process. However, as the current budget does not allow for this change, assistance has been sought from the RDP fund and official donor assistance to make this change possible. Such assistance will be required for the short term only (two to three years), until the South African Police Service budget is able to support RDP principles. The five programmes are the Community Policing Programme; the Information Management Programme; the Victim Support Programme; the Human Resource Development Programme and the Infrastructure Development Programme . These programmes will act as leverage, and will phase in the underlying objectives of the transformation process over the stated period (SAPS: Website).

To provide effective policing, the SAPS and the RDP have established two policing plans: the "Shield and Sword Plan" and "Community Policing".

Shield and Sword

The increasing stranglehold (both physical and psychological) of crime on South Africa must be broken immediately if our democracy and economy are to survive and prosper. The firmest and most decisive action must be taken against crime

immediately to prevent South Africa from plunging into the abyss of becoming yet another anarchic country. The eyes of South Africa and indeed the entire world are now on the SAPS to take the lead in the war against crime. The organisational framework within which crime is to be fought and beaten is the annual police plan required by parliament. Each police plan is a campaign in the war against crime, to be fought and won within the context government's recently announced National Crime Prevention Strategy (NCPS) (*Servamus*, 1996).

Police Plan 1996-1997

"The Police Plan for 1996/1997 is the first of its kind. It is a no-nonsense back-to-basics policing plan aimed at crushing crime wherever it is encountered. It is also a radical reassessment and reorganisation of policing at grassroots level in South Africa. Operationally, the heart of the police plan is a 'Sword and Shield' approach where the SAPS takes the offensive by hunting down criminals everywhere, while preventing crime by systematically reclaiming streets and rural areas from criminals. The SAPS will take the initiative from the criminals by turning them, and not law-abiding citizens, into the prey. The 'Sword and Shield' approach will simultaneously break the psychological and physical grip of crime and systematically reduce the operational capacity of criminals. Both serious and so-called 'petty crimes' will automatically fall within its ambit to turn the tide against criminals, thereby establishing a culture of respect for the law" (*Servamus*, 1996).

The following will be implemented with the 'Sword and Shield' approach:

Sword

The "Sword" refers to the mobile striking force of the SAPS by which specialised SAPS units dealing mainly, but not exclusively, with crimes prioritised in the police plan, will relentlessly hunt identified criminals, day and night. These categories include: hijacking and other vehicle-related crimes, gang-related crimes; taxi violence, possession of and trafficking in illegal weapons, narcotics-related offences, declared political massacres and robberies. "For this purpose 42 additional SAPS Task Forces have been set up to relentlessly hunt identified suspects, over and above other units whose normal function is tracking criminals. Although 'Sword' unit operations will not be confined to specific areas and will criss-cross South Africa, special attention will be paid to Gauteng, KwaZulu-Natal and the Western Cape. Their first aim is to track down and arrest South Africa's 10 000 most wanted suspects - already identified - within 30 days of the launch of the police plan. They will then systematically hunt down other target groups as they are identified" (*Servamus*, 1996).

Shield

The "Shield" component of the plan will protect communities by reclaiming streets and rural areas and by deflecting cross-border and international crime. The SAPS will aggressively establish control and dominate specific geographical areas to create a policing shield for communities. A major aspect is that of partnership policing in which the police form specific alliances with certain sectors, for example the business and agricultural sectors, shopkeepers, hawkers and the security industry. "Shield" will also feature hi-tech measures such as electronic and camera surveillance of certain

CBD areas in South Africa (Servamus, 1996). Furthermore, the idea of Safety Networks will be introduced, namely:

International Safety Network with Interpol to fight international crime such as fraud, counterfeit currency, gun smuggling, narcotics and money-laundering

Regional Southern Africa Safety Network with the police of Lesotho, Namibia, Angola, Zambia, Botswana, Malawi, Tanzania, Mozambique, Zimbabwe and Swaziland

Border Safety Network within South Africa itself, aimed at preventing cross-border criminal activity

Urban Safety Network to reclaim the streets from criminals

Rural Safety Networks, especially in KwaZulu-Natal, to combat political violence and rural crimes.

Parallel and ongoing measures to root out police corruption and improve discipline and services are also an integral part of the police plan. Naturally, the "Sword" and "Shield" components must be seen holistically as mutually supportive and co-ordinated. The 1996/97 Police Plan will make a decisive impact on South Africa's crime situation and so lay the foundation for eventually winning the war against crime. Ultimately, its success will depend on a supreme effort of will and commitment by all South Africans, but especially the SAPS and other organs of state in the justice system (*Servamus*:1996).

Community policing

Effective community policing embraces the active and willing reaction by the community to all aspects of police practices and procedures. "Such a co-operative endeavour, which stresses joint responsibility by citizens and police for community safety, requires a quantum leap in faith and trust between both parties" (Martin: SAPS Website).

Community policing has three basic premises:

- To work in mutual partnership with the community to protect life and property
- To solve neighbourhood problems
- To enhance the quality of life in our cities/country

The police, being the first line of defence in law enforcement, crime prevention, and public safety should be given permission to carry out these functions as they deem necessary. They cannot do this alone however, and in spite of community policing, the public must become involved as the eyes and ears on the home front.

Methods of community policing

- Increasing foot and bicycle patrols
- Designating certain officers to specific areas of the city to increase familiarity

between police and public
- Decentralising by placement of storefronts and neighbourhood offices in crisis areas of the city
- Developing of sub-stations
- Forming alternative response teams comprising trained personnel such as nurses or social workers to work out of the storefronts
- Holding town hall meetings to gain community co-operation and to increase officers' involvement in extracurricular community activities such as teaching crime prevention and safety programmes.

If the public continues to be actively involved in law enforcement, crime prevention and public safety efforts, community policing will be a success (Martin: SAPS Website).

7.9.1 Access to police services

Gauteng province, for the purpose of policing, is divided into seven areas: West Rand, Vaal Rand, Soweto, Johannesburg, East Rand, North Rand, and Pretoria.

Each of these areas has its own area head office, with the provincial head office situated in Johannesburg.

The total strength of police personnel in the province is as follows:

Table 23a Number of SAPS Personnel

Provincial headquarters	273
Johannesburg	6 317
East Rand	5 436
North Rand	3 151
West Rand	2 907
Vaal Rand	2 807
Soweto	4 455
Pretoria	6 458
TOTAL	**31 804**

Although Gauteng is geographically the smallest province in South Africa, it has the second largest population density in the country with 17,01% of the total population residing in the province.

Because it is viewed as the financial capital of South Africa, there is an endless influx of people to the province. In the current socio-economic climate, large numbers of these people are unemployed and in search of a better future.

Inevitably this leads to an increase in criminal activities which, in turn, places a tremendous strain on the available resources and service delivery of the South African Police Service in the province.

According to the map, there are currently 122 policing facilities in the province, serving a population of 6 847 000. An analysis of the number of police personnel in relation to the population shows an average of 4,65 members per 1 000 residents.

Accessibility

With regard to the accessibility of policing facilities to the community, the map shows that there is one facility for every 56 122 residents in the province.

Owing to past policies and practices in Gauteng, as in the other provinces too, certain underdeveloped areas need upgrading in terms of service delivery, as well as in accessibility of police services to the community.

Issues of relevance in meeting future needs

In addressing these needs, much has been gained from the Reconstruction and Development Programme. Based on the principals of the RDP, planning for eight new police stations in the province is in an advanced stage. All these stations will be erected in underdeveloped areas.

In addition, two other stations are earmarked for upgrading to ensure better service delivery to the respective communities.

Another project that is in an advanced stage of planning and consultation is that of a Community Safety Centre. It is envisaged that this project will establish a "One Stop" service centre in a community with all closely related services provided under one roof or in close proximity to one another. These include *inter alia* the SAPS, the justice and correctional services as well as the health and welfare services.

There has been much criticism of the service delivery of the police in the province. A professional and efficient policing service is needed and every effort must be made to ensure a safe and secure environment for the residents of Gauteng.

M . Penning
South African Police Service

MAP 23 : POPULATION PER POLICE STATION

Source : S A Police Services

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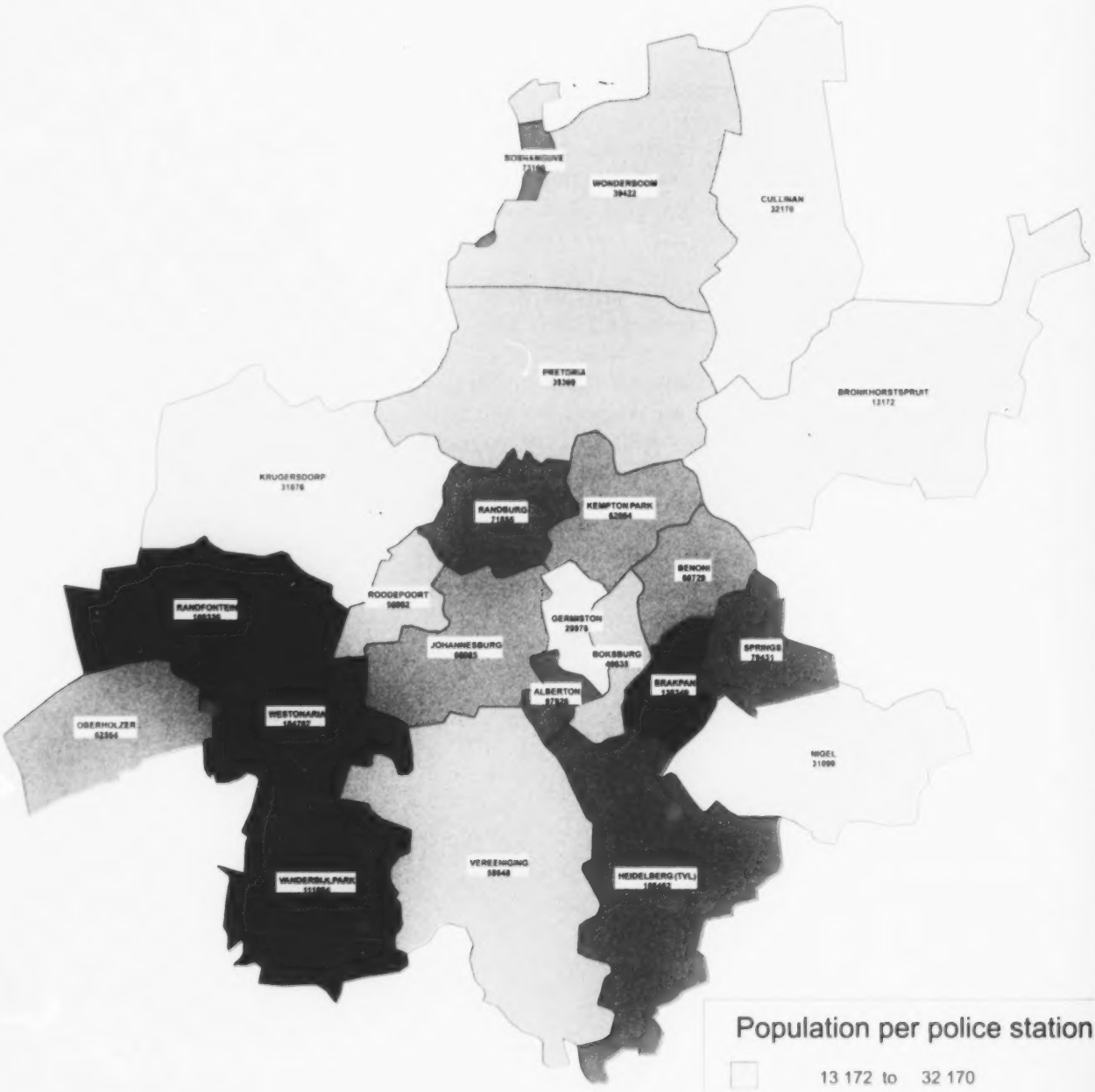

Population per police station

13 172 to	32 170
32 170 to	58 648
58 648 to	66 085
66 085 to	108 462
108 462 to	184 707

N

KM

25

Table 23 Population per police station

DISTRICT	POLICE FACILITY	TOTAL POPULATION	POPULATION PER POLICE FACILITY
Alberton	4	391 703	97 926
Benoni	5	303 647	60 729
Boksburg	5	204 176	40 835
Brakpan	1	138 349	138 349
Bronkhorstspruit	1	108 462	108 462
Cullinan	2	146 319	73 160
Germiston	6	173 856	28 976
Heidelberg (GP)	6	351 888	58 648
Johannesburg	24	1 586 040	66 085
Kempton Park	6	372 504	62 084
Krugersdorp	6	191 255	31 876
Nigel	3	93 296	31 099
Oberholzer	3	187 693	62 564
Pretoria	18	690 645	38 369
Randburg	5	359 275	71 855
Randfontein	1	109 336	109 336
Roodepoort	4	227 968	56 992
Soshanguve	2	146 319	73 160
Springs	2	158 861	79 431
Vanderbijlpark	1	32 170	32 170
Vereeniging	4	444 336	111 084
Westonaria	1	184 707	184 707
Wonderboom	7	275 952	39 422

8

DISCUSSION: The overall picture

Service Needs Index

As discussed in Section 4.2 the service variables selected for the Service Needs Index were ratios of population to police stations, post offices and hospital beds; the ratio of road length to district area; the ratio of 6 to 17 year olds to schools; percentages of fully serviced houses, informal houses, formal houses electrified and informal houses electrified and telephone shares.

A district with a low service index score and not requiring development intervention would have the following service profile: low ratios of population to police stations, post offices and hospital beds; a high ratio of road length to district area; a low ratio of 6 to 17 year olds to schools; high percentages of fully serviced houses, formal houses electrified and informal houses electrified; high telephone shares, and a low percentage of informal houses. A district with a high index score requires development intervention and would have the following service profile: high ratios of population to police stations, post offices and hospital beds; a low ratio of road length to district area; a high ratio of 6 to 17 year olds to schools; low percentages of fully serviced houses, formal houses electrified and informal houses electrified; low telephone shares, and a high percentage of informal houses.

The distribution of services shows that there is a distinct variance between the north and south. The south of the province, on average, has much lower levels of service provision than the north. Kempton Park and Bronkhorstspruit in the east, and Soshanguve in the north are also areas of low provision.

There are some instances of very high differences in levels of provision between adjacent districts in the centre of the province. Johannesburg is 21 and 29 index points higher in the level of service provision than Westonaria and Alberton respectively. Germiston is a massive 45 and 32 index point higher in the level of service provision than Alberton and Kempton Park respectively.

The correlation between socio-economic status and levels of service provision in Gauteng is 0,57 at a significance level of 0,005. This means that there is a fairly strong positive relationship between socio-economic status and service provision. In general high levels of service provision are associated with high socio-economic status, and vice versa. As correlations do not neccessarily indicate causality, it therefore cannot be assumed that the provision of services alone will bring about high socio-economic status. Economic upliftment programmes will have to be implemented in conjunction with the removal of services backlogs.

Combined Social and Service Index

The combined index sums and then averages the service and social indices, both having a maximum of 100, giving a maximum for the combined index of 100. As in the social and service indices, the higher the combined index score, the greater the degree of underdevelopment.

The combined index map shows that there is a distinct core of more developed districts with the less developed districts being found on the periphery of the province. The central, western and north-eastern districts have high levels of service provision and socio-economic status. The southern, eastern and north-western districts are all less developed than the core. The most notable cluster of underdeveloped districts is in the south-east of the province.

Soshanguve (77), Vanderbijlpark (74) and Alberton (70) are the three worst-off districts in the province. Soshanguve and Vanderbijlpark have social and service conditions that are worse than their neighbours to the order of 20 combined index points. Conditions in Alberton are a great deal worse than in the surrounding districts, especially Germiston where conditions are better by a massive 40 combined index points.

The summary of commentators' views is intended to provide an insight into the core-periphery developmental relationship between districts.

Summary of commentators' views

Population: Spatially Gauteng may be divided into **five regions,** with clear differences in terms of size, population numbers, population density and economic structures. As noted by Meintjies *et al.,* (1995), each subregion has a unique economic structure: services dominate in **Greater Pretoria**; trade and catering, finance and real estate and manufacturing in **Greater Johannesburg**; manufacturing in the **East Rand** and **Vaal**; and mining in the **West Rand**. This clearly reflects the history of the region with its origins as the country's mining centre and its subsequent industrialisation and diversification into the development of the tertiary sector to meet the needs of the mines, the factories and the people. This traditional trend is likely to continue with a core-periphery structure clearly evident from its socio-economic spatial patterns in the subregions and Gauteng as a province within the national space economy.

Employment: Gauteng is the economic heartland of South Africa and as such offers more than a quarter of all job opportunities in the country. Despite this Gauteng still has an unemployment problem and it was estimated that in 1994 almost 29% of the workforce was unemployed (October Household Survey, CSS 1995). The severity of unemployment varies considerably across magisterial districts in the province. Soshanguve has the lowest employment level with only 58% of persons in the 15-64 age group employed, while Oberholzer and Westonaria have the highest rate of 86%.

Dependency ratio: Gauteng is the centre of economic activity and employment in South Africa and hence is a magnet for job seekers. This concentration of economically active people means that the dependency ratio in Gauteng is lower than in other provinces. Indeed, the magisterial district with the highest dependency ratio

in Gauteng has a ratio of 1,38, while some magisterial districts in rural KwaZulu-Natal have dependency ratios in excess of 30.

Poverty: Gauteng is the economic powerhouse of South Africa and the wealthiest province. Indeed, almost 36% of the national total personal income is earned in Gauteng and the per capita income is 30% higher than the next wealthiest province i.e. the Western Cape. Measures of income in aggregate or average terms are often misleading, however, and despite the concentration of wealth in Gauteng, the province has the fourth largest share of poverty among the nine provinces.

Functional literacy: Given the general nature of the data the only significant factors illustrated are the rates of literacy and higher levels of education in urban areas as opposed to peri-urban and rural areas, as well as the big differentials between urban, peri-urban and rural areas. The causes of the high levels of illiteracy include the lack of free and compulsory education for Blacks, the high levels of poverty among the black population resulting in people having to leave school after one or two years to help bring in income or because there was not enough money to continue paying for education; the poor quality of education resulting in low levels of literacy or levels not being sustained over time; the high dropout rates before a sufficient platform of general education could be acquired; the inadequate provision of services resulting in many areas not having schools or the schools being too far away and there being no money to pay for transport; the low market absorption rates and poor and irrelevant education resulting in ambivalent attitudes towards the importance of education.

Education: Eight educational districts are in crisis: N2 (Pretoria East and Mamelodi), N4 (Soshanguve/Akasia), N6 (Tembisa/Kempton Park), N7 (Randfontein/Oberholzer/Westonaria), S1 (Benoni/Brakpan), S2 (Vaal area), S3 (Orange Farm area), and S4 (Alberton/Heidelberg). In these 8 districts, 217 schools are seriously overcrowded, and 58 600 students are without classrooms. The remaining districts, while not as critical, are all similarly overcrowded and have classroom shortages. In particular areas like C1 (Soweto South/Lenasia), C2 (Soweto Central and JHB central), C4 (Soweto West, JHB West), C5 (Randburg-Alexandra), C6 (Vosloorus, Dawn Park, etc.), N1 (Pretoria South East to Bronkhorstspruit), N3 (Pretoria Central, East and Atteridgeville), N5 (Dobsonville; Roodeport/Krugersdorp/Magaliesburg), and S5 (Springs/Nigel).

Hospitals: Hospital beds are not equitably distributed in the Gauteng province. When one analyses the number of beds per 1 000 people, one of the indicators of availability of health or hospital services, the following picture emerges: the provision of beds is inequitably skewed in favour of the West Rand (11) and Pretoria health regions (5,1). Central Wits (3) is in the middle range. The lowest level of provision is in the south and south-east regions of Vaal (2) and East Rand (1,8).

Housing: The districts in which shacks predominate and where the most dense urban informal settlements are located are Johannesburg, Kempton Park, Alberton, Germiston and Soshanguve. The first four districts owe this phenomenon to the availability of job opportunities. The last district, Soshanguve, has had an influx of residents from the Winterveld area of the North West province. There are low concentrations of informal housing in the Pretoria metropolitan area (excluding Soshanguve), an area experiencing economic growth, particularly along the

Centurion-Midrand corridor, due to the policies of the past government. Other districts with informal settlements are Springs, Nigel, Benoni, Brakpan, Boksburg and Heidelburg. These towns also have formal urban areas (Kwa-Thema, Duduza, Daveyton, Vosloorus) which served as dormitory towns. The most urgent problems in terms of the upgrading of informal settlements are to be found within the metropolitan areas of Greater Johannesburg, North-East Rand, Greater Pretoria, the Vaal, followed by the East Rand.

Water and sanitation: The distribution of services in Gauteng needs to be understood against the background of the impact of apartheid policies on settlement patterns. Apartheid residential planning led to the concentration of working-class Africans to the south-west of Johannesburg and to the north of Pretoria. The highest concentration of the African population is to be found in the districts of Soshanguve (99%) Vanderbijlpark (84%), Oberholzer (81%), Alberton (79%) and Heidelberg (77%). In the context of the extreme inequalities in the access of racial groups to water supply and sanitation services, districts with high concentrations of Africans (the most disadvantaged of the racial groups) generally have poor services.

Electricity: The population of Gauteng is centred mainly in the major urban towns and cities, while there are fewer households in the rural areas. It must be emphasised that the current Eskom licence area covers some but not all these rural areas. Local authorities are also involved for their rural areas. Where rural areas fall under the Eskom licence area, supporting networks usually exist. Factors such as relatively small scattered settlements make electrification difficult from a cost point of view. Farm labourers, homes are included in this category, thus their electrification is done in conjunction with the farm owner. The following factors make electrification in rural and/or urban areas difficult: some areas are used as transit areas for people waiting to move to more permanent sites; the proclamation of settlement sites are not controlled by Eskom; there are instances where settlement in a proclaimed area does not follow the town layout; and economies of scale push rural areas lower down the priority list.

Low-cost housing developments, subsidised by the Provincial Housing Board, are taking place. As most of these developments will be in the urban areas, the demand for electricity will increase, thus making the rural areas less attractive for the provision of electricity.

Roads: In Gauteng the road network is fairly well developed in terms of distance per square kilometre of land compared with the other provinces. Gauteng is, however, dintinguished by its high degree of urbanisation and metropolitanism. With few exceptions, communities generally do not have far to travel to reach a section of the major road network. Nevertheless, long commuting distances do still exist, but this aspect is being addressed. The problem facing Gauteng is rather that of adequate capacity as various sections of the network are oversaturated which is counterproductive and impacts negatively on the country's economy. The streets in former black areas vary from good to poor, for example Daveyton's streets (near Benoni) have been upgraded and repaired and are in good condition, while Ratanda's streets (Heidelberg) are in a fair to poor condition, mainly through a lack of maintenance. In Soweto the condition of streets varies from very good to very poor, but a concerted effort is being made to rectify matters, pending the availability of funds.

Residential telephones: Very high priority districts are those districts that are currently well below the provincial average. The other priority ranges are high, medium, low and very low. The very low priority districts have a residential line penetration that is much greater than the provincial average. The southern portion of Gauteng, including the districts of Oberholtzer, Westonaria, Vanderbijlpark, Heidelberg, Alberton and Nigel, is in the high or very high priority range. The central eastern section has two adjacent high priority areas, Kempton Park and Benoni. Soshanguve, in the north-west part of Gauteng, is also a high priority area. The low and very low priority areas, except for Springs, form a contiguous block including Johannesburg, Germiston, Boksburg, Roodepoort, Krugersdorp, Randburg, Pretoria and Wonderboom.

Postal services: Historically, the homeland policy (based on the Promotion of Black Self-government Act of 1959) which separated the South African blacks from the mainstream socio-economic development and the Black Local Authority Act of 1982, were among the powerful instruments of separate development. While the Black Local Authority Act of 1982 pretended to empower the so-called urban blacks socially and economically, it nevertheless relegated blacks, for example in the Pretoria townships of Mamelodi, Soshanguve and Atteridgeville or Saulsville, to socio-economic underdevelopment. Therefore there is one post office in Soshanguve with a population of approximately 437 000; two conventional post offices (built with asbestos) in Mamelodi with a population of approximately 333 000, and two post offices in Atteridgeville / Saulsville with a population of approximately 211 000. In Pretoria, in the former so-called white areas, there are currently no fewer than 45 post offices serving the population of approximately 551 192.

Police services: Because Gauteng is viewed as the financial capital of South Africa, there is an endless influx of people into the province. In the current socio-economic climate, large numbers of these people are unemployed and in search of a better future. Inevitably this leads to an increase in criminal activities which, in turn, places tremendous strain on the available resources and service delivery of the South African Police Service in the province. There are currently 122 policing facilities in the province, serving a population of 6 847 000. An analysis of the number of police personnel in relation to the population shows an average of 4,65 members per 1000 residents.

Conclusion

Each of Gauteng's subregions has its own economic structure: services dominate in Greater Pretoria; trade and catering, finance and real estate and manufacturing in Greater Johannesburg; manufacturing in the East Rand and Vaal; and mining in the West Rand.

Although wealth is concentrated in Gauteng, it has the fourth largest share of poverty among the nine provinces. The Gini co-efficient of inequality indicates that most of this poverty occurs among the black population. The skewed levels of socio-economic status are a result of apartheid policies and are also evident in spatial terms through racial segregation. Not only did many black people have to leave school at an early age to bring income into the household by working as unskilled labour, but those that

achieved higher education were often frustrated by job reservation policies.

The provision of services to households and also public facilities favoured the white communities. As a result of the high levels of poverty the majority of blacks could not afford household services, if these were provided. The low level of public facilities provided in black communities resulted in overcrowding.

Future research could monitor changes in service provision and socio-economic status. The main sources of data would be the 1996 Census, service providers and the RDP activities. The 1996 Census would allow the Social Needs Index to be updated, but would provide information on services provided to households only. Service providers and government departments could be the sources of information for the provision of public services. The most important facet of the 1996 Census is that information on household services will be available at enumerator area (EA) level. As EAs usually are socio-economically homogenous, this will allow a rigorous analysis of the relationship between socio-economic status and service provision.

It is highly probable that as there is now a political will to provide services and economically uplift previously disadvantaged communities, these communities should simultaneously experience improved socio-economic status and service provision. The process of creating an equitable society should be monitored by the abovementioned research to provide insight into the rate of change in the spatial distribution of services and also socio-economic status. It is hoped that this document and future research will contribute to the process of uplifting the disadvantaged and thereby contribute to the creation of an equitable South African society.

B. O'Leary
Human Sciences Research Council

MAP 24 : SERVICE PROVISION INDEX

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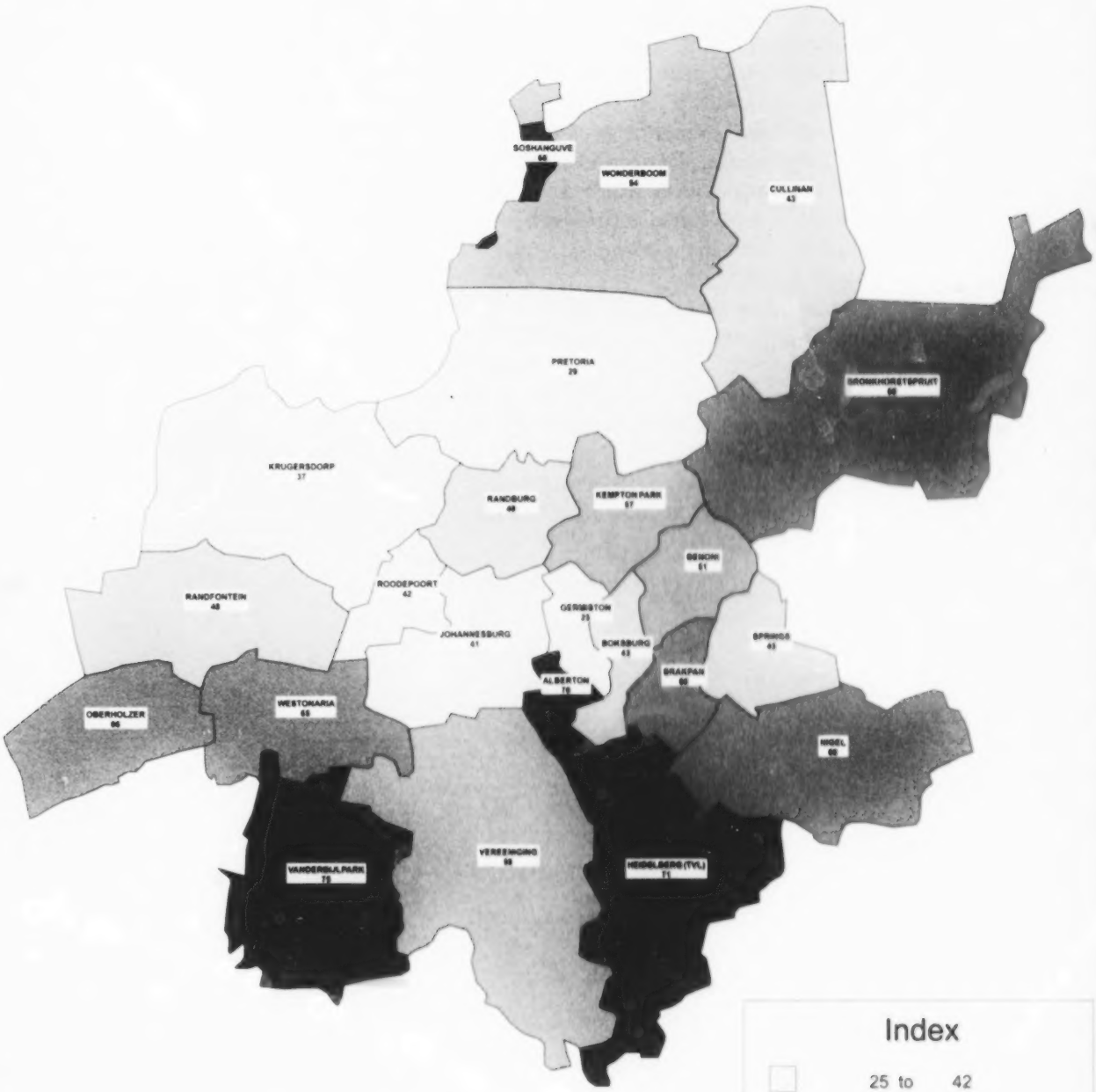

Table 24 Combined Social Needs and Service Provision Index

DISTRICT	SOCIAL INDEX	SERVICE INDEX	COMBINED INDEX
Alberton	70	70	70
Benoni	67	51	59
Boksburg	50	43	47
Brakpan	62	60	61
Bronkhorstspruit	55	60	58
Cullinan	49	43	46
Germiston	35	25	30
Heidelberg (GP)	62	71	67
Johannesburg	55	41	48
Kempton Park	46	57	52
Krugersdorp	47	37	42
Nigel	62	60	61
Oberholzer	37	66	52
Pretoria	42	29	36
Randburg	43	49	46
Randfontein	55	48	52
Roodepoort	37	42	40
Soshanguve	86	68	77
Springs	57	45	51
Vanderbijlpark	73	75	74
Vereeniging	54	58	56
Westonaria	38	65	52
Wonderboom	55	54	55

MAP 25 : COMBINED SOCIAL NEEDS AND SERVICE PROVISION INDEX

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This book is one of a series that uses Geographic Information Systems (GIS) to outline the need for and provision of services in each of the nine South African provinces. A global view or indicator of the simultaneous influence of the socio-economic status of people and the level of provision of domestic services and public facilities in all districts is needed. Such a view encapsulates the social and service profile of each district, and can be obtained, firstly, by developing indices for the social and service variables for each district. A single index, or benchmark, of levels of socio-economic status, household services and public facilities in each magisterial district is created by combining these indices.

Graphic and tabular representations of levels of development can highlight spatial inequalities and thereby raise questions of causality. To provide information about local levels of development, knowledgeable persons involved in service delivery in each province were contacted for their comments. The books in this series contain maps, tables and contributions from spokespersons in NGOs, universities, government departments, service providers, parastatals and research organisations.

It is hoped that these books and future research on the rate of change in socio-economic status and service provision will contribute to the creation of an equitable South African society.

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